Trains

April
1944

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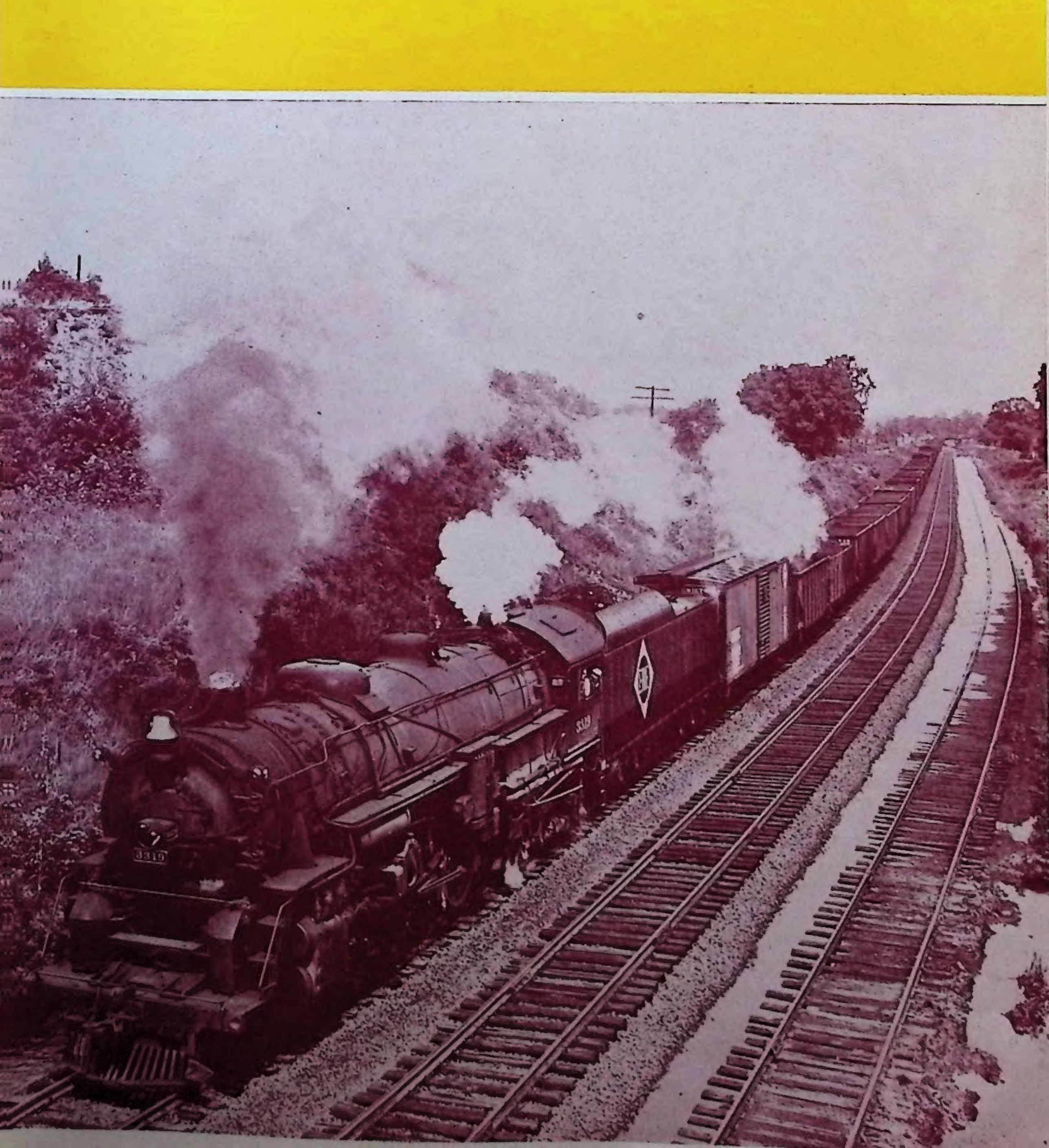

Trains

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COMPARED with the acceptance of the Diesel-electric locomotive in passenger and freight road service, the popularity of the Diesel for switching has had a meteoric rise. About 18 per cent of all switching service is now performed by Diesels, whereas in late 1940 the percentage was less than 10. This points out a partial answer to the question of postwar motive power.

Each form of motive power has its own special capabilities. And yet there is hardly a locomotive assignment which cannot be handled by a properly designed locomotive of either Diesel or steam type. On many an assignment the over-all costs of these two types of power do not vary by more than the thickness of a shim gauge, and it is a close job of figuring for the railroads to decide whether Diesel or steam will do the job for the least money. But when the job is within the special range of one type of power or the other, the decision is not so close, local conditions on each railroad do not play such a part in the decision, and the choice of that type of power becomes more unanimous. Such is the case with the Diesel in switching service.

The big, important and inherent difference between a Diesel locomotive and a steam locomotive is that the Diesel generates full horsepower at slow speed because it is geared down by electrical transmission, while the steam locomotive, with its direct drive, gets up maximum horsepower only at a considerable speed. Thus the Diesel is at its best, competitively, in service which can make good use of the high power at slow speed. The Diesel can exert an exceptionally high tractive effort from a standing start. To exert the same starting tractive effort a steam engine would need more maximum horsepower.

It is this economy of maximum horsepower, more than thermal efficiency, which makes the Diesel such a nationwide choice for switching work, where slow-speed tractive effort obviously is important. Very few steam switching locomotives will be built in the future. But for high-speed passenger service the story will be different. On long nonstop runs the steam locomotive, with its maximum horsepower at high speed, is eminently suited to accelerating trains quickly out of restricting curves and other slowdowns.

With local and semi-local passenger service it is another story. To handle the same schedule requires more horsepower of steam locomotive than of Diesel, because of the inherent ability of the Diesel to develop full power while accelerating from a stop. With a steam locomotive powerful enough in proportion to train weight, an equally good job can be done, and after all the costs are counted it may often in the future be more economical to use steam on local and semi-local runs. But the odds will favor the Diesel. The Diesel won its widest public favor as motive power for long-distance high-speed trains, and yet its most fitting use in passenger service is on the multitudinous *"400"* trains of the Chicago & North Western which furnish excellent fast service to dozens of small and medium-sized cities north and northwest of Chicago, with stops every few miles.

Freight service varies as much as do freight cargoes. On the typical local freight train, happy hunting ground of steam locomotives which have been replaced in through service by larger units, the Diesel would find itself as at home as in switching, but even new steam power has seldom been purchased for this type of work, let alone more expensive Diesel locomotives. Further, the local freight engine is often used for very few miles or hours per week, and high-priced power cannot work out its high depreciation and investment costs in such service. Thus the talk which has been heard in some quarters of specially designed, relatively inexpensive but new, steam locomotives for local freight work.

For through freight work, the motive-power battle will continue to be fought out on the grounds of over-all costs of producing ton-miles. The tendency of recent years has been to design freight locomotives more and more for high horsepower at speed rather than for maximum starting effort. The problem is to get the train over the road. Both Diesel and steam can roll heavy freights along at what were passenger-train speeds a few years ago. The Diesel perhaps has a slight advantage on bucking stiff adverse grades and on starting, and for some roads, like the Santa Fe in the Southwest, it solves a bad water problem. But the steam locomotive costs less, and with most freight locomotives working overnight and standing idle all day, first cost is a big factor.

A. C. Kalmbach.

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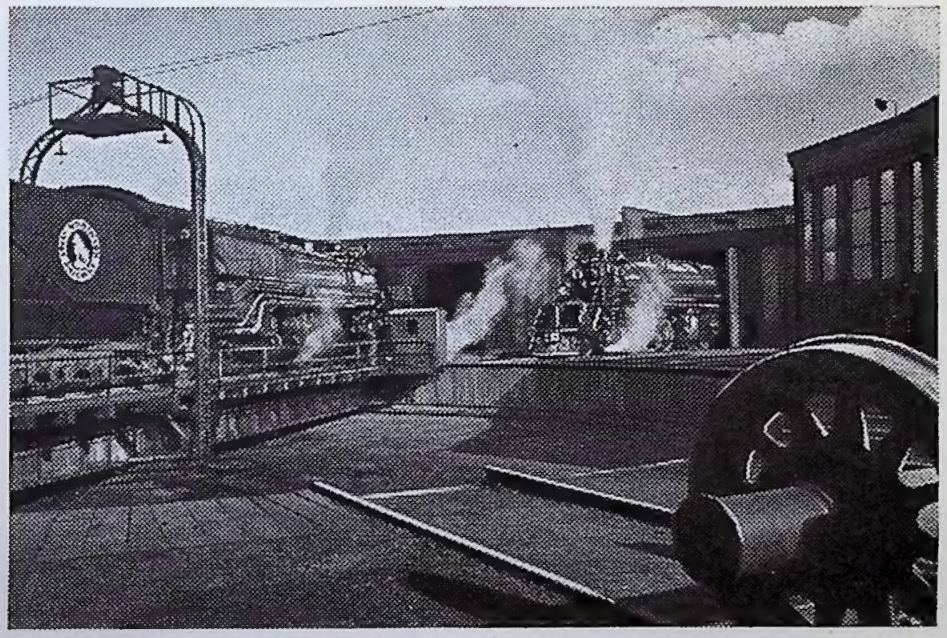
Cover photo by Donald W. Furler.



Locomotives take a terrific pounding as they pull their heavy loads across the country. After each run they must be thoroughly inspected and made ready for the next. The picture shows one of the giant steam locomotives that hauls Great Northern's trains across the Rocky Mountains on a turntable at the railway's roundhouse at Whitefish, Montana.

Reinforcements

Roundhouses aren't very glamorous places. They don't make pretty pictures. The men and women who work in them know the smell of smoke and the feel of grease.

For theirs is the serious and rather grimy business of grooming thousands upon thousands of horsepower, day in and day out—overhauling, repairing, servicing and checking the tons of whirling steel and iron that haul the trains.

They *fight* too, these men and women—fight time, for engines are desperately needed all around the clock; fight engine failures, for failures delay this grim business of war.

When this country went into the war, the Great Northern had 882 engines. That was fewer—by 513—than were in service during the first World War.

With fewer but more powerful engines, the Great Northern is moving *more than twice* the traffic it did during the first World War. That gives an idea of what has been going on in its roundhouses and locomotive shops.

When Japan struck at Pearl Harbor several huge Diesel-electric engines were nearing completion for the Great Northern. But almost immediately came the interruption of gasoline and fuel oil deliveries to the East Coast by ocean.

This important task had to be taken over by the railroads, and the engines which were built to haul Great Northern freight trains across the continental divide were rushed into action in other parts of the country.

For more than two years the Great Northern has had to do its part of the war job with what it had. Not until recently has there been any relief in sight.

But now three new mammoth Diesel-electric engines are hauling heavy freight trains between Havre and Whitefish, Montana. Each engine rates 5,400 horsepower, measures 193 feet, and weighs 463 tons.

By fall it is expected that ten more of these engines will be in operation on this mountain division. They will release nearly twice that number of steam locomotives for service on other parts of the system.

And that is good news for the determined workers in roundhouses and locomotive shops whose achievement in meeting every requirement for power, when it was needed, has fashioned another brilliant Victory for the home front.

GREAT NORTHERN RAILWAY

By Edward Hungerford:

The Man in the Tower

WHEN John Player was eight his father closed his office in London and moved the family to Philadelphia. That was in 1868. . . . The elder Player was an engineer of distinction. He is credited with having made the first real development of the rich iron fields in northeastern New York, not far from Port Henry on Lake Champlain. He patented, both in England and the United States, the modern blast furnace, in universal use today without changes in its basic principles, except such modifications and improvements in structural details as must of necessity arise during a period of more than three-quarters of a century. That was the contribution of the elder Player to the industrial progress of the land. The contribution of the younger is hardly less dramatic.

John Player remembers clearly the Philadelphia of his boyhood. Winters he skated on the Schuylkill and sometimes he played cricket with the other boys on an empty lot just west of 40th Street where, in those days, Philadelphia came to an abrupt ending. Occasionally he would take the Market Street horse car and with his father go down into the city. Once they walked by a great building at Broad and Spring Garden streets and John looked inside the open door. In the shadows of the vast room he discerned the shapes of railroad engines standing in orderly rows or being hoisted aloft and moved back and forth. There were the fires of forges and the shapes of the workmen as they moved around the locomotives. A huge din went with all of it.

"This is the Baldwin Locomotive Works, the largest in the world," said John's father, and then and there John Player decided that when he grew up he would like to design and build railway locomotives. He hardly could have dreamed then that one day he would become one of the foremost designers of American locomotives.

At that time it all was very far off. Before young John Player had been in this country hardly two years, his father died and he returned to England. There his uncle helped him complete his education, and all dreams of becoming an American faded from his mind.

Yet in 10 years he was back again, this time as a designer of locomotives in the United States. His British training stood him well. He showed real aptitude for the work, and he made real progress. First he went to the Pennsylvania shops at Renovo as a special apprentice, just to get acquainted with American machine tools and methods. After nine months the Pennsylvania transferred him to its vast main establishment at Altoona. There he became a special draftsman and gave his time to working up the designs of the splendid Class D engines.

AT THE beginning of the '80's, construction was starting on a railroad all the way across New York State from New York City up the west bank of the Hudson and across to Buffalo, at the foot of Lake Erie. This was the New York, West Shore & Buffalo, and it was the largest new railroad that had been attempted at one time since the days of the Pacific railroads. No tremulous, hesitant matter, this, such as had been the Erie and the New York Central—haltingly putting themselves down link by link and taking nearly 20 years in the process. The West Shore was to go through for its entire 425 miles in one fell swoop. As a matter of fact, it took nearly eight years to do the job—and then the road was in utter bankruptcy and in the hands of its powerful competitor before it had been completed through to Buffalo. It had failed to provide itself with sufficient financial reserves to carry itself through a short season of adversity.

Yet all of this did not prevent its being a superb railroad for its day. Built new from the start, it had better grades, better track, shorter mileage than its chief competitor; its passenger stations were models of architectural distinction, its cars and locomotives the best that still might be designed and money might buy.

John Player helped Howard Frye design the locomotives for the West Shore Railroad. Upon the completion of the road in 1884, he became its chief mechanical officer and made his headquarters at its shops in the small village of Frankfort, not far east of Utica. . . . With one exception the road had its locomotive shops in small towns—at New Durham, at the west portal of the Weehawken Tunnel, at Frankfort, and at Newark. Its East Buffalo shop is now used by the Pullman Company.

IN 1886 the West Shore was taken over, lock, stock and barrel, by the New York Central, and most of its locomotive shops were closed. John Player went to St. Paul to become the chief engineer of the St. Paul, Minneapolis & Manitoba Railway (the present Great Northern) to design and superintend the construction of the new road's locomotives. These engines were being built by the Rogers Locomotive Works in Paterson, N. J. John Player spent a summer supervising their construction. In the autumn of the following year he went to the pleasant town on the shores of Lake Erie which was to be his home for the rest of his life—Dunkirk, N. Y.

WHEN the Erie Railroad was being built, a century ago, with Dunkirk as its western terminal it had a very vigorous and able locomotive engineer out there: one Horatio G. Brooks. Brooks was working for the road even before that memorable day in May, 185[illegible] when the first train through from the Hudson River (and bearing among its distinguished passengers the President of the United States and four members of his Cabinet) came tooting its way down the long hill into town. Brooks had

gone out to meet the train, and it was he who piloted it into Dunkirk. Secretary of State Daniel Webster gave him an extra handshake on the platform of the new station.

Brooks did not remain long in the cab of a locomotive. Soon he was in charge of that smart new shop that the Erie built beside the roundhouse at its lakeside terminal. Having learned how to run an engine, Brooks decided to learn how to build them. At one time he was in charge of building engines all over the Erie system. But most of all he preferred living in Dunkirk, and there the road suffered him to remain.

The Dunkirk Shop of the Erie continued in existence for 18 years. Then President Jay Gould decided that it was a useless expense. No longer was Dunkirk the terminus of the main line of the road, but rather of a comparatively small branch. Brooks sorrowed at the decision and the thought of the hundreds of men losing their jobs, and the next thing that Dunkirk knew, Horatio G. Brooks had taken over the engine shop by the roundhouse for himself and had established a plant that was to continue from that day to this and send its products rolling all over the broad world.

Horatio Brooks had decided ideas about locomotive design. When he went into the business of building engines on his own he put these into effect. A plain, outspoken man, he hated showiness anywhere, in men or engines. It was a day when the locomotive in the United States was magnificence-plus. To say that it was ornate was putting it mildly. On the average engine there were enough curlicues and ornamentation to sink a ship. End to end, Brooks painted his locomotives a uniform black. All that brasswork and silverplate that had been the despair of the young firemen who had to keep them polished disappeared—also, all the curlicues and the ornamentation. Brooks engines became distinguished for their simplicity. But they also became distinguished for their efficiency—and that was the thing that was beginning to count.

HORATIO BROOKS died in the spring of 1887, and that autumn John Player went to live in Dunkirk and there build locomotives. John Player still lives in Dunkirk and the locomotive plant still operates. Even though lordly black locomotives no longer roll out of its portals, it remains a highly important manufacturing division of the American Locomotive Works. It produces engine parts of great variety and great precision.

But John Player would like to see it build engines again. He told me so the other night. He likes to recall the days when he was in full charge of the design of all the shop's engines. Speaking of him just the other day, one of the better-known locomotive builders said:

"He was one of the foremost designers of the country, one of the first to realize the advantage of the Atlantic-type engine over the old American type; and many of the early Atlantics at the Brooks plant were designed by him. He also designed and built a number of high-speed Ten-Wheelers, notably for the Lake Shore & Michigan Southern. He was an early advocate of the piston valve, of the Walschaert gear, the Belpair fire box, the compound engine and high pressure. He designed many Prairie types, the most notable being for the Lake Shore and used in fast passenger work, including the *Twentieth Century*. He was one of the earliest advocates of the extensive use of steel castings in locomotive construction."

Much of the most modern locomotive design of today, with its increasing dependence upon the use of alloy steels, began in the mind of John Player. . . . These things John Player would not tell me himself. But as we supped together he did tell me many things: of the Lake Shore (now the western link of the New York Central), one of the richest and busiest railroads in all the world and one of the best customers of the Brooks works.

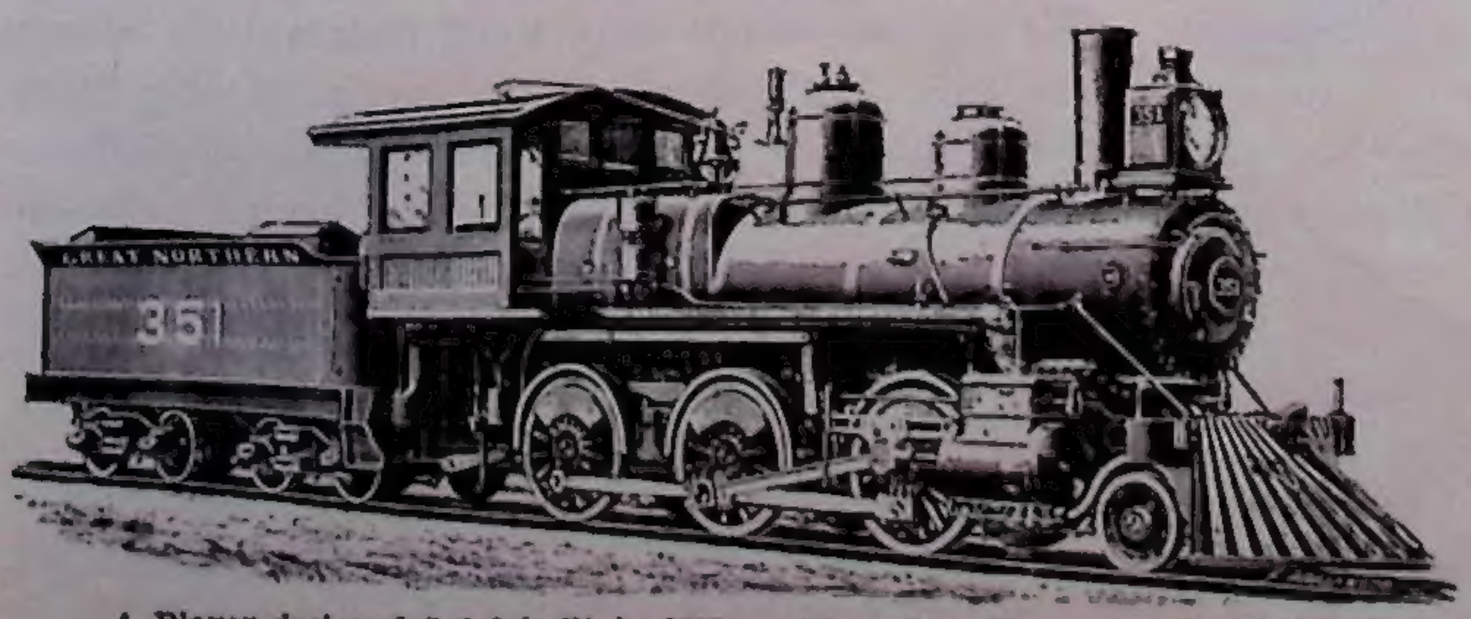
One day the Lake Shore, which still thunders through the town, sent a generous order for a group of new locomotives. John Player looked over the plans carefully, then threw them into the waste basket.

"They were no good," said he. "I could design a damn sight better engine myself—and I did."

In outward appearance the new engines still looked much like the drawings that had been sent from the road's headquarters at Cleveland. In many details they were different. But when they went into service they did a better job than any locomotives that the lordly Lake Shore had ever owned, and the road became immensely proud of them. Its chief mechanical officer went around smiling and telling what he and "his boys" had done toward the evolution of the steam locomotive in the United States.

John Player, back in his little office in Dunkirk, smiled—and said nothing.

Edward Hungerford



A Player-designed 2-6-0 built in 1893. From *Iron Horses*, W. W. Norton & Co. (Copyright, 1941, E. P. Alexander.)

H. Reid, 1202 Redgate Ave., Norfolk, Va.

The Caboose

★ **The traveling office of the freight train is the most individualistic of railroad vehicles.**

By H. Reid.

RAILFANS from far and near gather around "Old-Timer" Echolls to hear his tales of the iron pike. He knows them all, and it is no difficult job to get him started. One day when I met up with him, he greeted me with a cheery "Hi ya, young feller," and, as he laid down a popular railroad publication, he continued, "I s'pose you came to listen to one o' my yarns . . . what'll it be?"

Before I could answer, he'd already begun talking. "Did you see this article about cabooses in this here magazine?" he asked. Again he gave me no chance to say a word, but began his story. . . .

"Now I wonder why this feller didn't say anything about our Norfolk Southern silver crummies? I guess he couldn't take 'em all in just one article, eh? Yep, we're awful proud o' them cabooses. They found out that silver paint stands up better than the usual red. Have you seen the insides o' them? Why, gosh all hemlock, they're regular hotels in themselves! . . . Not like them we had to ride in a long time ago.

"In the old days the trainmen had to ride in the open, until somebody got the idea o' nailin' some boards up on flat cars or box cars, whichever ones the railroad wasn't usin' at the time. Those flimsy contraptions sheltered the crews from the weather, though. Then came the problem of heating. I've been told that they threw some sand on the floor, and built a fire on top o' this to keep themselves warm. Then, when they actually built cabooses . . . which were flimsy little things, but I'll get to that later . . . anyway, unreliable pot-bellied stoves were added, and the crews not only kept themselves warm, but they could cook their meals at the same time. Boy, I've eaten my best meals over those stoves! You've probably read about caboose chefs . . . well, it's all true, every word of it. These fellers can cook better than any o' them classy society Frenchies.

"Well, pretty soon the conductors wanted to see what was going on around the front part o' the train, so a small hole was sawed in the top of the 'rolling palace,' and then the conductor

poked his head out o' the opening and saw all he wanted to. Some o' them even put up benches on the roof so's they could be comfortable. I reckon it got pretty cold up there, and eventually the cupola that you know of today came into use by many roads, and the others were quick to follow the practice of placing a permanent enclosure on top o' the crummy.

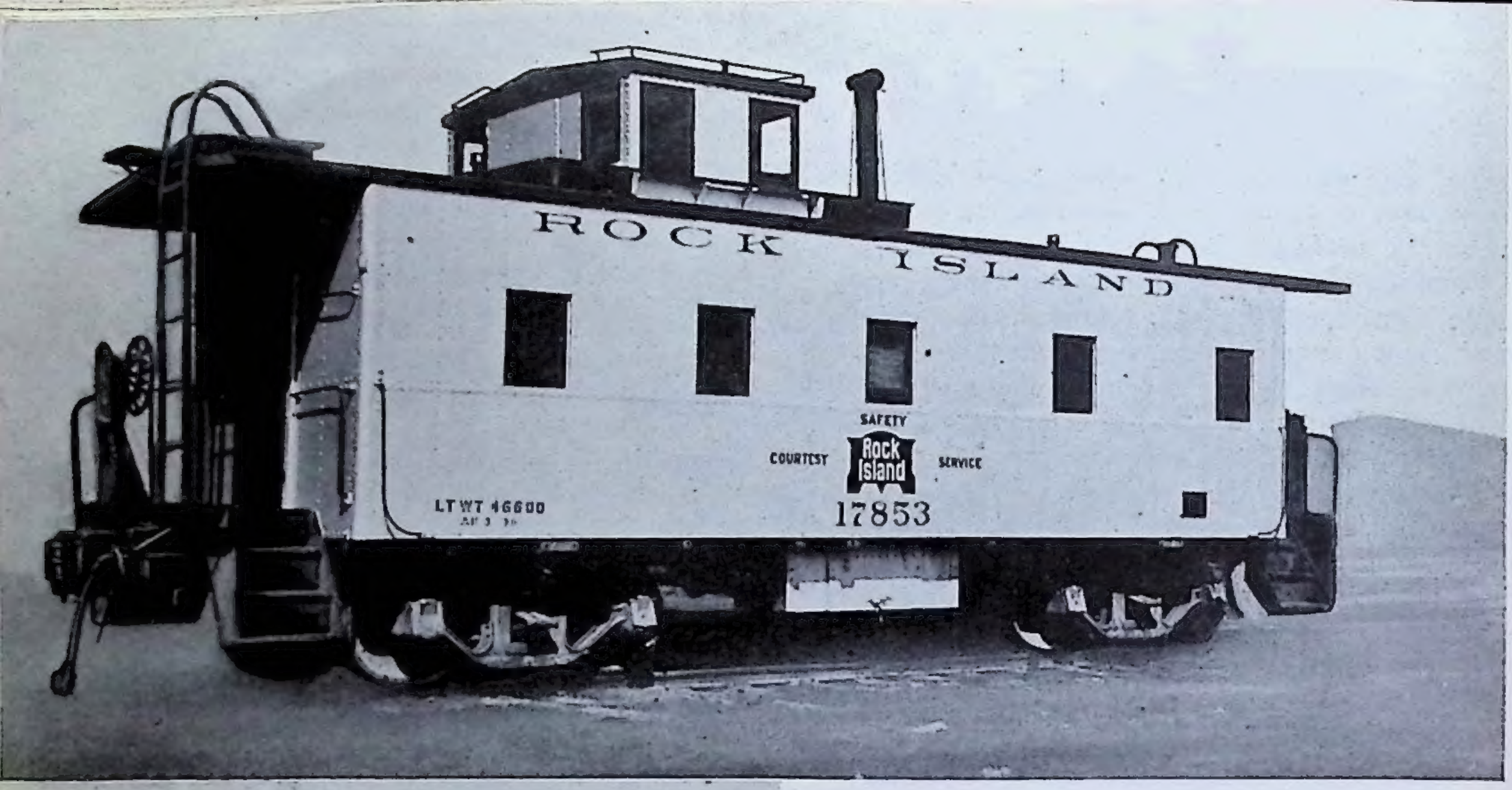
"I was going to tell you about the first real cabooses, wasn't I? Some o' them were remodeled box cars, and some were dinky four-wheelers. The little four-wheelers were dangerous at first. The designers hadn't figgered on pusher-engines . . . and they made the cabooses entirely out o' wood. When a pusher-engine coupled up to the end o' the train and began to put pressure on the crummy, well . . . things were liable to happen . . . and they often did! Naturally, with an all-wood underframe that wasn't reinforced with steel, the cabooses were likely to telescope. Many's the hapless feller who was crushed to death in such an accident. Gradually, steel underframes found their way beneath the caboose, and they're just as safe, nowadays, as any other rolling stock.

"Cabooses have even been used for passenger cars; did you know that? I remember a railroad out West . . . it seems to me it was called the Camino, Placerville & Lake Tahoe. . . . Anyhow, they used a caboose to carry passengers for about 30 years. There's a road up in Canada, the Dominion Atlantic, that still uses a crummy for a 'varnish' baggage-coach. The Canadians call cabooses 'vans.'

"Yep, they collect nicknames just like everything else. I s'pose you could make a great big collection o' names that have been slapped on the poor caboose. Monkey buggy, jailhouse, rest room, brain box, hash hut, shack, zoo, go-cart, chariot, cabin car, den, baby's wagon, way-car, glory buggy, and doghouse are just a few o' the monickers. In fact, you can call 'em anything that you can think of and most o' the

"Crummy" or "monkey buggy," old or new, of any shape or color, a freight's caboose is the crew's castle. The cars pictured here give some indication of the variety to be found in this famous institution of the railroad. On the opposite page is Atchison, Topeka & Santa Fe all-steel No. 1675 at Los Angeles, Calif. Below, from top to bottom, are: another all-steel caboose, Chesapeake & Ohio No. 90070; Southern Pacific No. 136; a retired C&O four-wheeler, now serving as caboose-house-office at Newport News, Va.; a yellow caboose of the Alabama, Tennessee & Northern; and, at left, Nashville, Chattanooga & St. Louis bay-window caboose.

H. Rei



time trainmen will know what you're talking about.

"There've been some tall tales circulating around concerning cabooses. It's hard to believe the one I heard about the mountain-climbing Norfolk & Portsmouth Belt Line hack. One day, so the story goes, a runaway caboose slid down a slight grade to where a bridge was located. The bridge must have been up to let a ship through, but this car had no regard for the boat whatsoever, and kept right on going. When it reached the bridge, it still showed no signs of stopping, and actually began climbing up the diagonal supports of the bridge! It probably liked it 'way up in the air, because it just sat there on top o' that bridge and didn't even make an attempt to come back down to earth, either. This line always did have trouble with that bridge."

The "Old-Timer's" story was interrupted momentarily when a whistle shieked out. . . . "Say, there goes one o' our standard cabooses behind that extra freight over there. They paint them the regular tuscan-red color." . . . As I watched the crummy slowly fade from view, and the

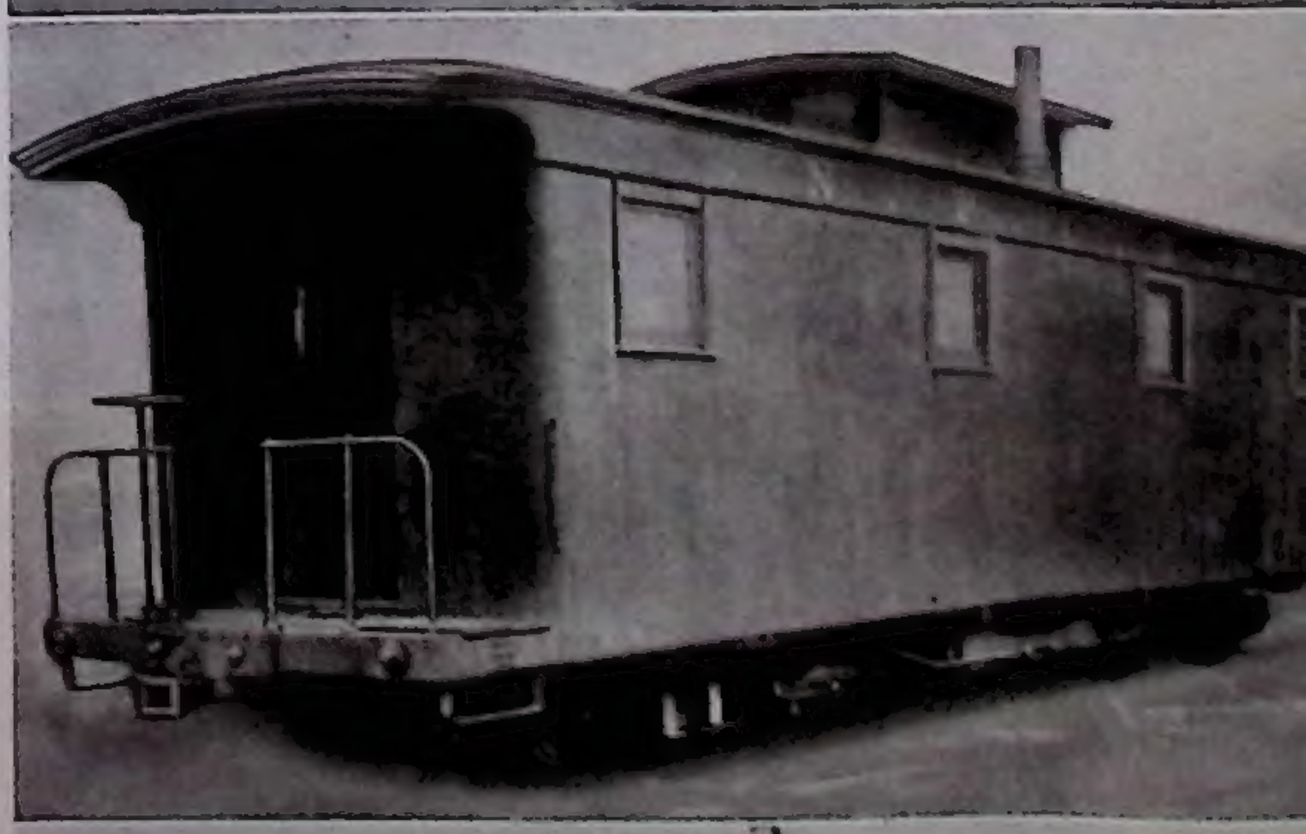
Typical of modern steel cabooses in recent years is the Rock Island example at top of page, complete with snappy paint job. An earlier period in Rock Island history is represented by the little four-wheeler, one of two which were in transfer service at Kansas City for years. One was wrecked, the other scrapped. The short, modern, wood-sheathed, steel-underframe caboose belongs to the Norfolk & Portsmouth Belt Line. Four-wheelers like the Lehigh & New England caboose have been widely used in the East. The No. 1 at top of page, right, decorated the rear end of the three-foot-gauge

trim "N. S." initials vanish into nothingness, the old man filled his pipe and again glanced at his magazine. It wasn't long before he began to speak again. . . . "Now let me see, where was I?" . . . Reminded that he was telling me about the early stages of the caboose era, he started talking in earnest. . . .

"There isn't any set rule regarding the placement of the cupola . . . this is left entirely up to the railroad itself. I s'pose you've seen some in the middle, some on the side, and others on top 'way in the back. The Lehigh Valley even has some cars in use today without any cupola at all! And the insides are always handsomely furnished . . . especially out West, where the crew has to live in the hack for such long periods o' time. Closets and lockers are to be found in each and every caboose in operation today. . . . And the things that are put in them!

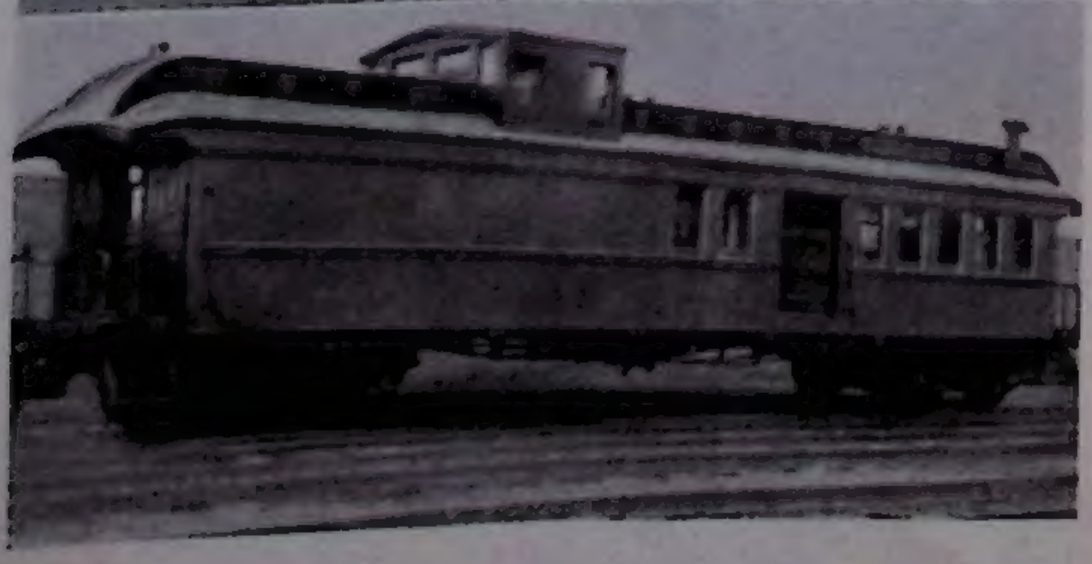
"Gosh a-mighty, what the different railroads haven't done to their shacks! . . . You see, they hardly ever send their cabooses on to any neighboring roads, so the home road doesn't have to build its crummies in accordance with the other roads' requirements. That's why you see so many goofy-looking experiments. The Southern is working on some new bay-window cabooses, and the Reading Company, so I'm told, has just completed something like 50 new all-steel crummies that are modern masterpieces of railroad craftsmanship. The Milwaukee Road, as you know, pioneered the bay-window cabooses, and it's working on about 100 new ones of this description. . . . And the Baltimore & Ohio has some weird glory wagons with side cupolas.

"There are long cabooses, and short ones; high ones, low ones; some with eight wheels, and others with but four. I think the Association of American Railroads said that there are over 21,000 cabooses in operation on American rails today. A large portion of these are of entirely different construction. I can remember some super-long ones in Vermont; they belonged to the St. Johnsbury & Lake Champlain. . . .



trains of the curvaceous Uintah Railroad of Colorado which was recently abandoned. The Burlington caboose-coach combination was rebuilt from old passenger equipment for mixed-train service. The ex-flatcar shelter cars of the Terminal Railroad Association of St. Louis are unique. The commodious St. Johnsbury & Lake Champlain cabooses are equipped with long-wheelbase passenger-car trucks. Both the Central Pacific and North Pacific Coast photos are collectors' items. The latter dates from about 1895, and the car shown was probably narrow-gauge. CP is now operated by Southern Pacific.

Pushing behind the caboose, Consolidation No. 2707 helps the Boston & Maine BR-1 out of Fitchburg, Mass., to East Gardner, highest point on the line. Other cabooses below, top to bottom, are: the Lehigh Valley cupola-less No. 95210; the Nickel Plate No. 236, with marker lights on the cupola; the Norfolk Southern tuscan-red No. 363; and the Dominion Atlantic (Canadian) combination baggage-coach-van No. 92.



Then the Reading Company, one of the few remaining roads still using four-wheelers, has some mighty nice little hacks; and the St. Louis Terminal Railroad has some unusual ones that it calls 'shelter cars' which give the appearance of a flat car with a small hut attached on the top. . . . And the Lehigh & New England also uses some distinctive four-wheelers. The Southern Pacific simply letters its cabooses with the road's initials, while the narrow-gauge teenie-weenies of the Denver & Rio Grande Western are burdened with lettering.

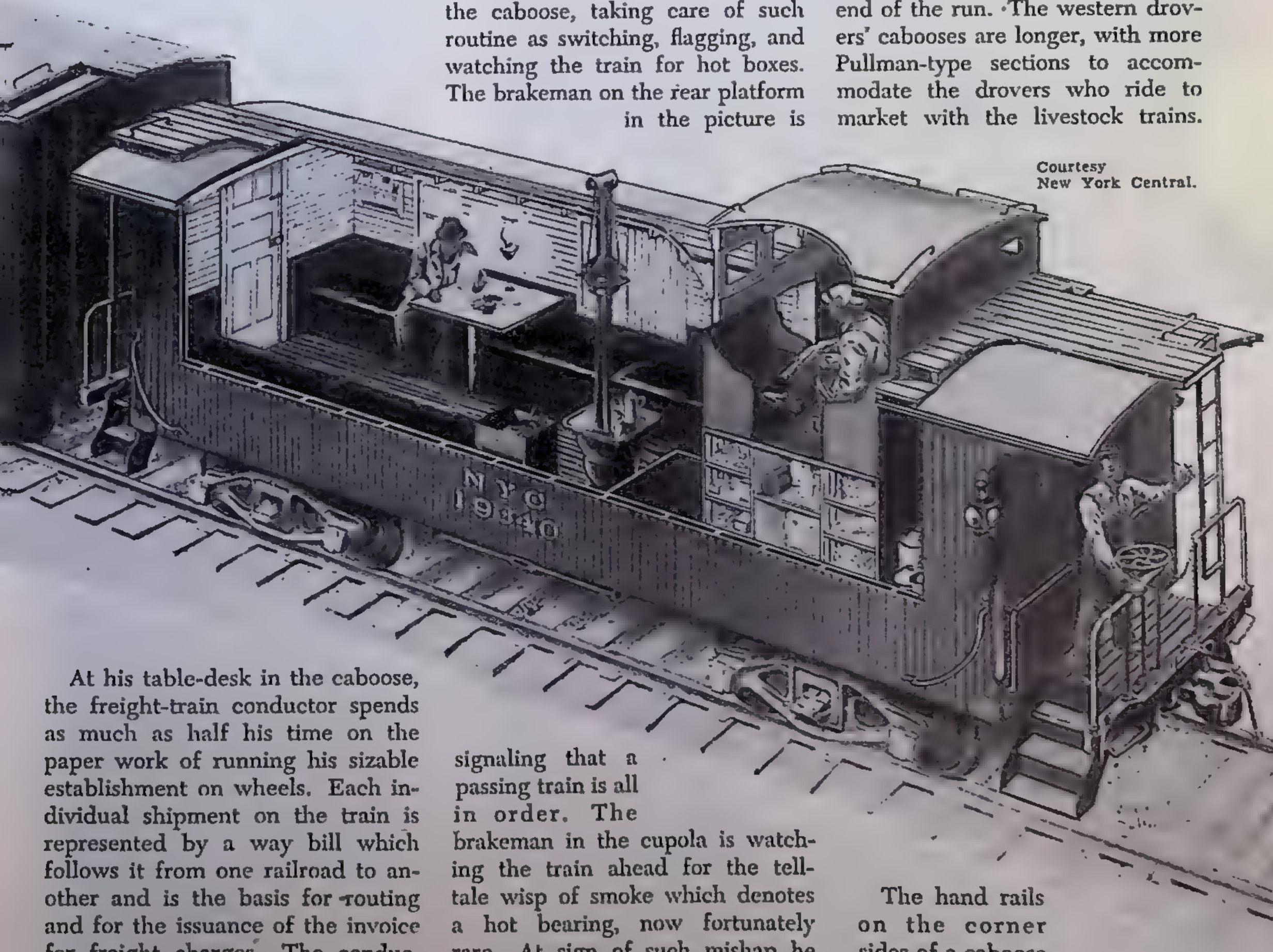
"Many cabooses are equipped with high-speed passenger trucks. I remember that the Lackawanna has some of these, and so does the Boston & Maine. I think you'll find a lot of arch-bar trucks still being used on the American cabooses just about as frequently as any other type. Four-wheelers seem to be outmoded . . . like the narrow-gauge! There's a soft spot in my heart for the little fellers, though. Almost all railroads at one time or another have had some on their roster. They are popular with the fading slim-gauge pikes. Have you seen pictures of those 'miniatures' of the abandoned Uintah Railroad? You couldn't even cuss a cat in them, they're so small. I recollect a four-wheeler in Pennsylvania, belonging to the Coudersport & Port Allegany . . . a typical jerkwater outfit, anyway. . . . It had one o' its glory wagons rigged up with a Railway Enthusiasts electric sign. The Enthusiasts fixed it up to suit their needs, and the C&PA was kind enough to install this contraption on the end of the caboose!

"Yep, young feller, the caboose has played an important part in the history of American railroads . . . and don't let anybody tell you different. Why, when the Pennsylvania wanted to perfect its automatic rear-end release and quick rechargin' valve, it installed one in a caboose in Scully, Pa. In fact, just about all o' the new-fangled safety devices find their way to the caboose before they've finished testing 'em."

The old gentleman's train was pulling out in a short while, or I suppose he would have kept on talking until all hours of the night. He excused himself and made his way to a long wooden caboose. Agilely hopping up to the deck, he waved a cheery farewell as the train slowly began to roll. Somehow his words lingered in my mind, repeating themselves over and over again. . . . "The caboose has played an important part in the history of American railroads." . . . Nobody will ever tell me differently, either.

Caboose Anatomy

The caboose is the operating headquarters and office of a business institution which may carry an inventory of more than a quarter-million dollars in merchandise, and which represents an investment in equipment (including motive power) of more than half a million dollars!



Courtesy
New York Central.

At his table-desk in the caboose, the freight-train conductor spends as much as half his time on the paper work of running his sizable establishment on wheels. Each individual shipment on the train is represented by a way bill which follows it from one railroad to another and is the basis for routing and for the issuance of the invoice for freight charges. The conductor's signature receipting for these waybills acknowledges that he now has the shipments under his charge —no small responsibility.

The wheel report occupies more of the conductor's time. The cars of the train are listed in detail with owners' initials and numbers, together with contents and weight. To this list the conductor adds cars which are picked up and notes cars which are set off along the run. This wheel report furnishes the basis for the railroad's statistical records of freight movement. From it the tonnage and car length of the train can be figured at any time, and any changes in these figures are reported by wire to the dispatcher.

One or two brakemen also ride the caboose, taking care of such routine as switching, flagging, and watching the train for hot boxes. The brakeman on the rear platform in the picture is signaling that a passing train is all in order. The brakeman in the cupola is watching the train ahead for the tell-tale wisp of smoke which denotes a hot bearing, now fortunately rare. At sign of such mishap he will flag down the engineer, using a red fusee at night. In emergency the air brakes can be applied by releasing train-line air pressure through an emergency valve.

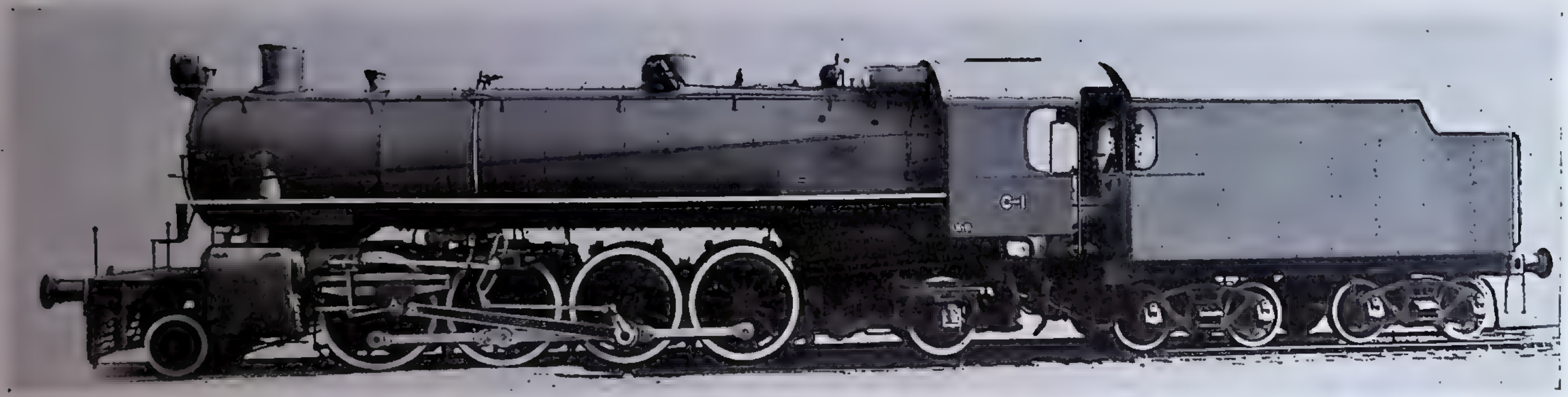
In lockers, mostly below the cupola, the trainmen store their lunches. Very likely an icebox holds a good supply of food, bought by the crew, which can be cooked on the pot-bellied stove to furnish amply satisfying meals. A good cook is a valued man on any freight-train crew. The caboose is almost invariably assigned permanently to a single crew, and the men make it their home on wheels. It may even contain Pullman-type sections with berths which can be made down for sleeping at the away-from-home end of the run. The western drovers' cabooses are longer, with more Pullman-type sections to accommodate the drovers who ride to market with the livestock trains.

The hand rails on the corner sides of a caboose are curved to assist trainmen in climbing aboard when the train is under way. Facing somewhat backward, the trainman grabs the hand rail with one hand. The motion of the train, combined with the curve of the rail, pulls him right up onto the rear step.

South American Electric Locos.

TWENTY of the most powerful narrow-gauge electric locomotives ever built have been completed in the United States for the Estradade Ferro Sorocabana of Brazil. One of them is shown above on the General Electric test track at Erie, Pa. The railroad is electrifying 207 meter-gauge track-miles, representing its double-track line between Sao Paulo and Santo Antonio, with 3000 volts D. C. The multiple-unit cars for the Estradade Ferro Sorocabana will be the first meter-gauge 3000-volt units to go into service.

The 523 is one of three large electric industrial locomotives built by General Electric for the Chile Exploration Company for use in open-pit copper mines. These standard-gauge, 80-ton, 600-volt D. C. locos use pantograph, third rail, or a 3000-foot extension cable for collecting power.



Canadian-Built Locomotives for India

THE first locomotives built in Canada for service in India are 145 Mikados now under construction for the Indian State Railways at the Canadian Locomotive Works and the Montreal Locomotive Works. Before the war most Indian railway equipment was obtained in Great Britain.

The design is known as the X-Dominion type and is a smaller version of the recent heavy Mikados in use on Canadian lines. The construction work is specified to Canadian Pacific standards, and CP men are not only supervising and checking the construction, but will supervise the stripping and loading as well as the reassembly of the locomotives in India.

These engines are built for the standard wide gauge of India, 5′-6″. The first railroad in India was started in 1852, long after the 4′-8½″ gauge had become established in many other parts of the world, but years before anyone would conceive of railroads connecting up into continent-wide systems.

The Indian railroads were of extremely substantial construction from the outset. The East Indian Railway, for instance, cost $88,300 per mile in original construction, despite the fact that it was built across a flat country where little cutting or filling was necessary and that it was built with the cheapest labor in the world. Stations are fireproof, roadbed is substantial, and the rolling stock is well built.

The specifications for the new Indian Mikados are compared with those for a typical recent American Mikado, the 800 class of the Detroit, Toledo & Ironton.

Specifications:	East Indian Railway	Detroit, Toledo & Ironton
Road classification	282-S-198	800
Date built	1943-44	1940-41
Tractive effort, pounds	35,000	55,600
Cylinder diameter and stroke, inches	21 x 28	23 x 30
Driver diameter, inches	60	63
Weight on drivers, pounds	141,000	248,500
Weight on pilot truck, pounds	20,700	50,100
Weight on trailing truck, pounds	36,300	70,900
Weight of engine, pounds	198,000	369,500
Weight of engine and tender, pounds	321,750	563,666
Steam pressure, pounds	200	260
Grate area, square feet	47	66.9
Evaporative heating surface, square feet	2164	4009
Superheater, square feet	623	1815
Tender Capacity: Gallons of water	4500*	14,300
Tons of coal	13†	18

* Imperial gallons. † English tons.

India's railway system.

India has a railway system which is very complete in those parts which are commercially important. In 1935, the latest year for which figures are available, total Indian railway mileage was 43,118, of which 38,800 miles were state railways.

Swiss Tourist Railway

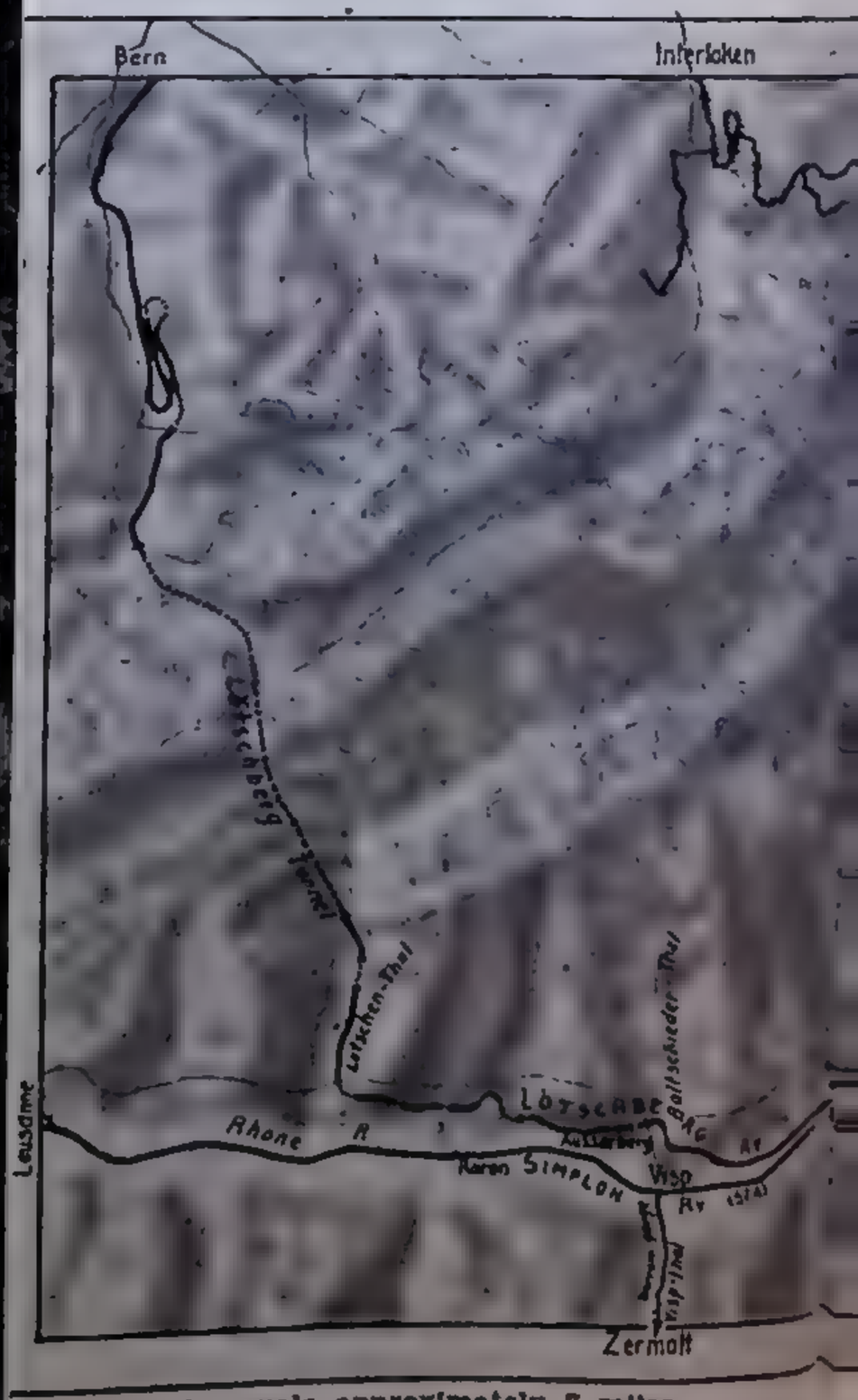
★ 60-mile-long Furka-Oberalp route electrified as war diminishes coal supply.

Photos courtesy Official Information Bureau of Switzerland.

HIGH in the Alps, electrified trains are climbing up the slopes through the passes, over the ridges between Swiss mountain villages. The service now does not constitute "travel" as the Swiss knew it in the gay and prosperous days of peace, when tourists came from all parts of the world to gasp at the grandeur of Alpine scenery or to enjoy the winter sports. The war has imposed rigid travel restrictions, and the onetime tourists are elsewhere in graver pursuits.

Nevertheless, the electrification of mountain railroads, particularly the scenic Furka-Oberalp route which traverses the mountains to form a link between the Rhone and the Rhine rivers, promises that, when hostilities have ceased and the normal conditions of peace are restored, travelers will be assured of more speed and greater comfort on their sightseeing expeditions.

Although construction of this 60-mile railroad was started in 1911, the road was 14 years being built, and its electrification was not completed until 1942. The outbreak of World War I created the first interruption just when, in 1914, the first section of the line connecting Brig with Gletsch

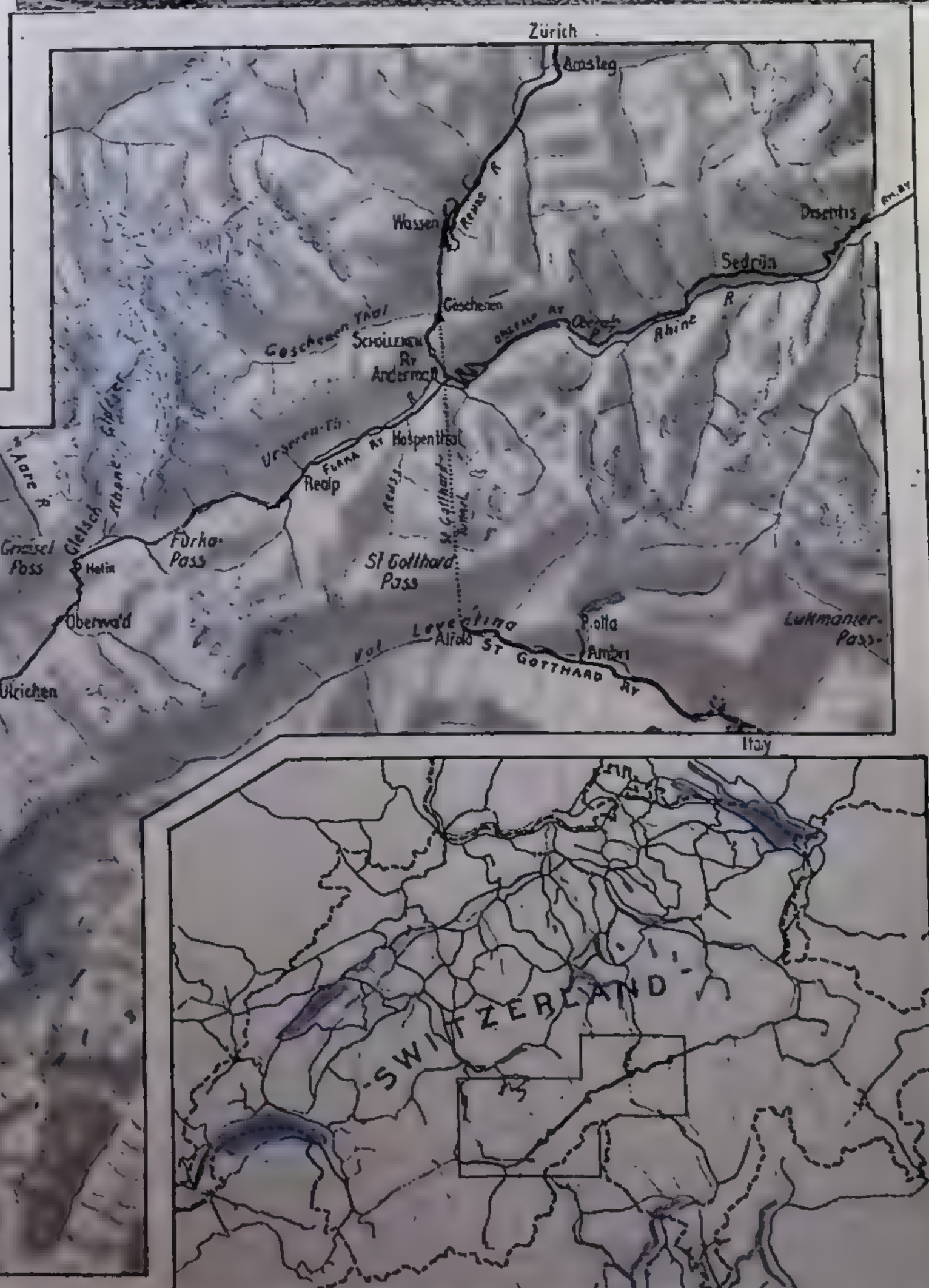


1 inch equals approximately 7 miles.

Mountains rise on all sides as the electrified Furka-Oberalp traverses the Alpine region above Andermatt. Opposite page: A Furka-Oberalp train travels over a viaduct near Grengiols in the Upper Valais of scenic Switzerland. These electric trains now reach many hitherto inaccessible places.

(At the foot of the Rhone Glacier, cradle of the River Rhone) was about to be opened for travel. The war meant that all work on the part of the line through the vitally important and strongly fortified St. Gotthard area had to be suspended.

Further complications grew out of the fact that the road originally was financed mainly by French capital, and for a considerable time it appeared that work on the sections between Gletsch and Andermatt (13½ miles) and between Andermatt and Disentis (18 miles) would have to be abandoned. A satisfactory solution was reached, however, in 1925 when the Swiss government, together with the cantons and other interested railways, purchased and completed the line.



But with the outbreak of the Second World War and its ever-increasing coal-shortage, the Furka-Oberalp management in 1940 decided on electrification. To insure regular winter traffic on the Andermatt-Disentis part of the line, which served a famous ski region, construction of avalanche galleries and new tunnels and the rerouting of the Tschamut-Oberalpsee stretch were started at once. By September, 1940, electric locomotives operated between Andermatt and Oberalpsee, and by the middle of October between Disentis and Tschamut, in the realm of the young Rhine. Only the high connecting link between Tschamut (5591 feet) and Oberalpsee (6670 feet) had to continue with steam traction until May 31, 1941.

Electrification of the Andermatt-Gletsch-Brig stretch was begun in April, 1941. Here, too, work was started at both ends. The Andermatt-Realp part was completed at the end of September, and the Brig-Niederwald-Oberwald section soon afterward. There remained the more difficult high-altitude line from Oberwald (4492 feet) to Gletsch (5784 feet) and Realp (5060 feet). This part of the route was opened to traffic in the spring of 1942.

Through magnificent Alpine scenery, the electrified railroad travels from Brig in the Rhone Valley to Disentis in the Grisons. The train below is in the Fleischer Valley, with Finsteraarhorn in background.

The railroad is of the narrow-gauge type with rack-and-pinion construction on 19½ miles of the entire 60-mile stretch. More than 50 viaducts, a number of avalanche galleries, and 12 tunnels, of which five are of the loop variety, add greatly to the technical interest of the route.

Strange as it may seem in a country where electric railroads abound, the Furka-Oberalp line was until recently operated by steam. Since the road runs mostly on the surface in high-altitude territory, the builders feared that removing the electric installations each autumn and resetting them in the spring (a necessary precaution in the lofty, unprotected regions) would prove too expensive.

Now the cantons of Valais, Uri, and Grisons are joined by electrically operated railways with direct continuation, under the same management, on the Brig-Visp-Zermatt and the Andermatt-Goschenen (St. Gotthard) lines. Through cars are available from Zermatt via Brig, Gletsch and Andermatt to Goschenen, or via Andermatt to Chur, Davos or St. Moritz.

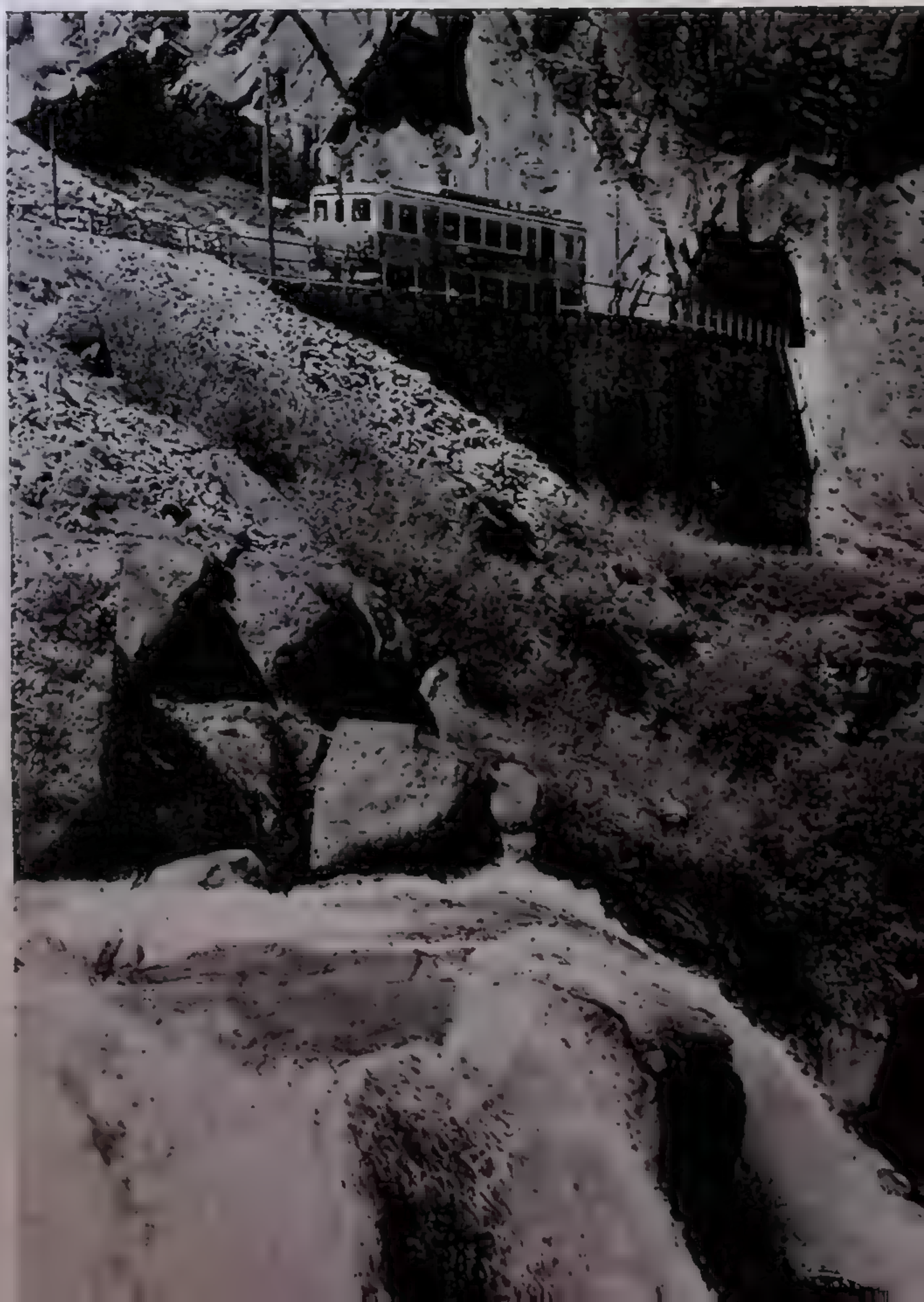
Electrification has reduced the time of the Brig-Disentis express trains from 4¾ hours to 3¾ hours, and locals make the trip in 4¼ instead of 5¼ hours. Slow going, perhaps, to the average American traveler, but still a highly substantial reduction in the running time on mountainous terrain and precipitous grades.

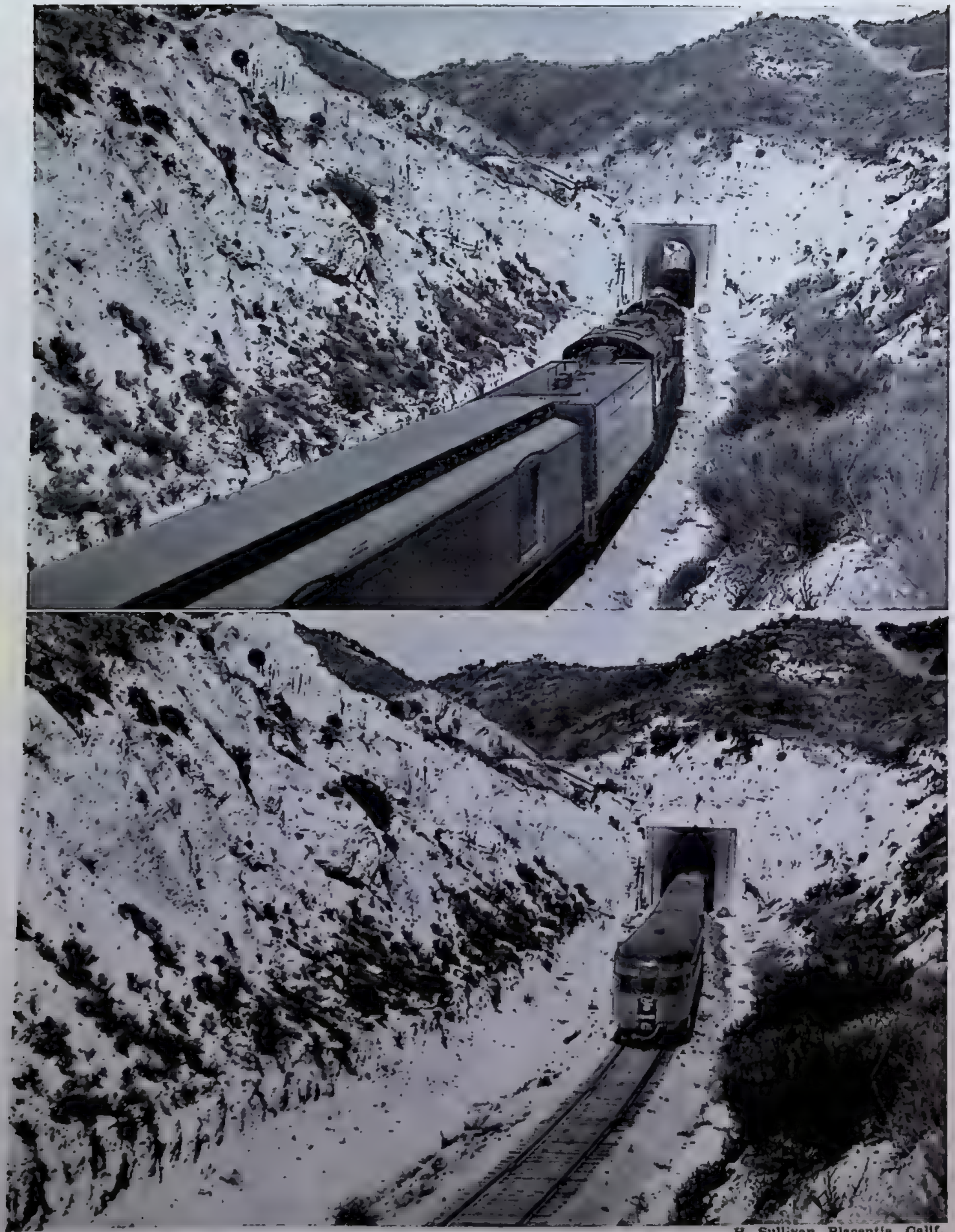
Two types of hauling vehicles are used on the Furka-Oberalp Railway: 1400-horsepower locomotives with four axles and four driving motors to haul heavy direct passenger and freight trains, and rail cars with four axles and two driving motors of 650 horsepower for light passenger traffic. All locomotives and rail cars are fitted with adhesion and rack drive.

On the mountainous stretch between Gletsch and Realp, contact lines and poles have to be removed for the winter, but a specially devised system permits rapid re-installation in the spring. On those sections of the route which operate throughout the year, an electric rotary snowplow is used in winter to clear the track. This vehicle is fitted with two turbines and is driven by single-phase 500-horsepower motors, with the locomotive which propels it furnishing the necessary electric power. The rotary plow is capable of clearing away the snow up to a height of over eight feet, and it can remove 7½ cubic yards of snow per second.

Thus, when men again are free to enjoy all that picturesque Switzerland has to offer, they may journey in comfort and with great facility to the pinnacles of the world—perhaps to soar off into space on a pair of trusty skis, perhaps just for the pleasure of looking down.

Electrified trains pass Gluringen, in the Upper Valais. Falls in the young River Reuss (below) are seen from the track linking Goschenen and Andermatt.





H. Sullivan, Placentia, Calif.

The *Chief* on the Cajon.

The Santa Fe's Chief, fastest daily train between Los Angeles and Chicago, climbs the Cajon Pass north of San Bernardino. The tunnel is one of two small ones along the climb. There is no tunnel at the summit of the pass, which is used jointly with Union Pacific.

The Signal in the Cab

Union Switch & Signal Co.

No fog can dim these signal indications in the locomotive cab.

PERHAPS the most spectacular signaling development is cab signaling. Cab signals are audible and visible signals in the cab of a locomotive which repeat the indications of the wayside signals. In a few installations they are used without wayside signals, but this practice has a number of disadvantages so that the trend has been to use cab signals to supplement rather than displace wayside signals.

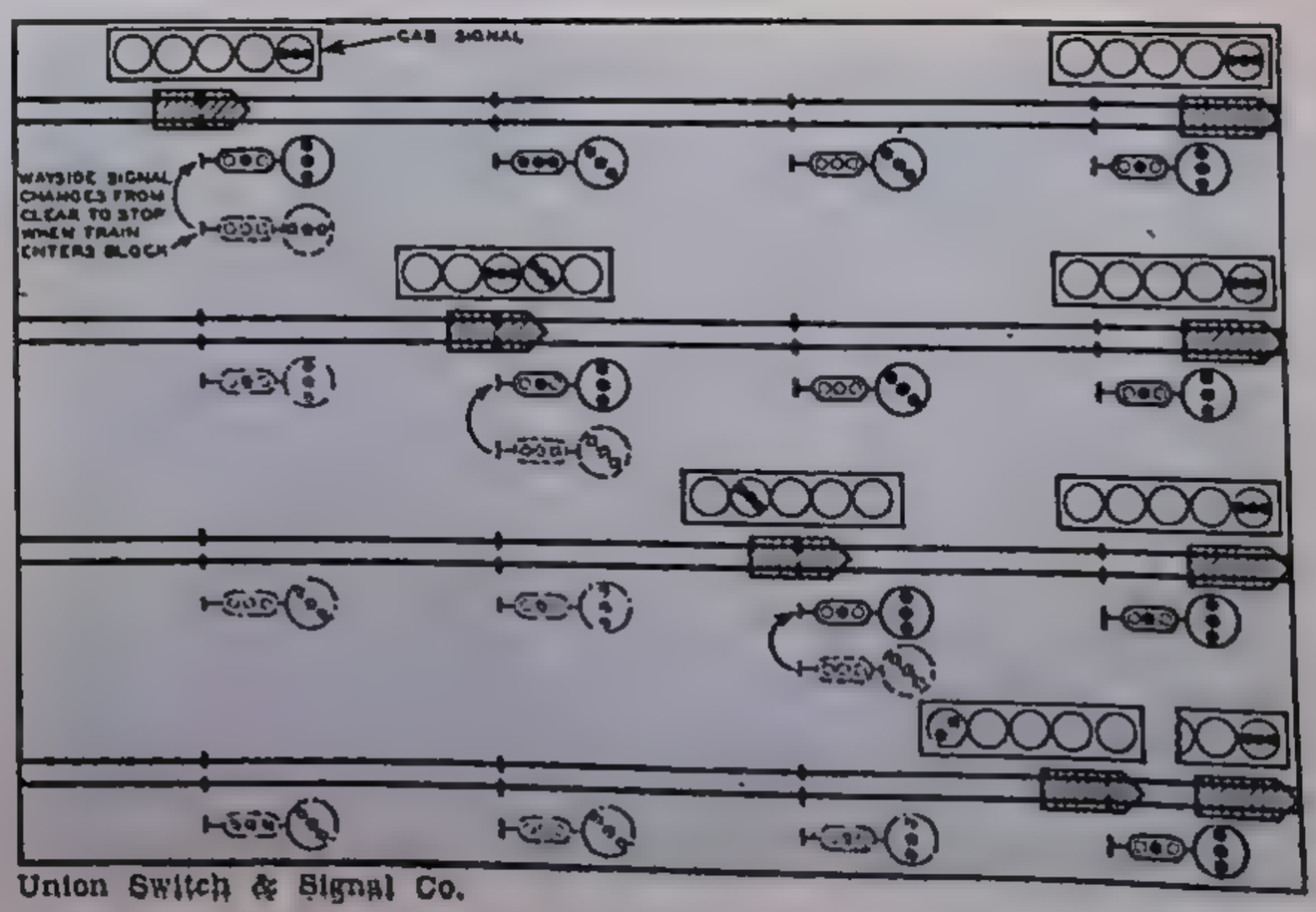
Cab signals have been used in Europe since about 1880. In this country, the general adoption of cab signals dates from about 1920 in connection with the installation of automatic train control on at least one division of each of the major American railroads, as ordered by the Interstate Commerce Commission. While there has been relatively little extension of automatic train control since that time, a number of roads have voluntarily installed additional cab signaling as an aid to the enginemen in foggy and inclement weather.

There are two basic types of cab signaling: intermittent and continuous. In the intermittent type, the indication is picked up by contact or by electromagnetic induction at, or near, the entrance to a block. In the continuous type, the indication is continuously picked up by the locomotive through a special track circuit and pickup coils. The continuous type has, of course, the advantage that in case of a change in the indication for the block ahead, the engineman is notified at once and can govern the train speed accordingly.

The IC, C&NW and Pennsylvania have installations of cab signaling without wayside signals, and a recent installation was made in the signaling of the San Francisco Bay Bridge. In each case, however, wayside signals are retained at interlockings. The disadvantage of omitting wayside signals is that failure of the cab signal equipment on a locomotive (or M. U. car) makes it necessary to revert to manual-block operation or to use another locomotive Another disadvantage of relying exclusively up on cab signaling is that the engineman's attention is distracted from looking ahead on the track, which is his primary interest, particularly where there are numerous grade crossings.

Unlike wayside signals, cab signals are rarely seen in operation by the traveling public. On PRR M. U. trains it is occasionally possible to look through the vestibule door and observe the cab signals in operation. Hudson & Manhattan Railroad trains which operate over the PRR tracks to Newark are equipped with cab signals. Passengers are permitted to ride the front platform and can at least hear the audible signal (horn) each time the train receives a more restrictive signal indication.

The four indications as transmitted from track to cab.



Union Switch & Signal Co.

Backing off the ladder

This unusual angle picture of a New York Central Mohawk at Harmon, N. Y., won third prize for John T. Warren Jr. in the Third Scholastic Salon of Photography of the American Institute of the City of New York.

John T. Warren Jr., 1 Ridge Rd., Groton-on-Hudson, N. Y

SPRAWLED across the maoli like some great rapidly growing vine, the lines of the Southern Railway System reach every state south of the Potomac except West Virginia. With terminals at Washington, New Orleans, Cincinnati, St. Louis, Memphis, Jacksonville, Richmond, Norfolk, Charleston, Brunswick and Mobile, the Southern is equipped to handle the enormous traffic flowing between the North and the South. Its lines bisect four mountain ranges (Cumberland, Great Smoky, Blue Ridge, and Appalachian) and traverse two great agricultural regions: the Piedmont Plateau and the Mississippi Delta, both among the most fertile areas in the world.

Key point of the entire 8000-mile system is Potomac Yard, across from Washington. From its classification tracks go textiles from the Carolinas, peaches from Georgia, oranges from Florida, vegetables from Mississippi, and cotton, lumber and coal from Alabama.

With no less than seven main lines, the Southern may well be described as one of the most versatile roads in the country. Besides being a north-south hauler (Washington - New Orleans - Memphis), it is also an east-west carrier (Memphis-Charleston) and a Midwest-Florida line (Cincinnati to Jacksonville) as well. On these routes are encountered the conditions of mountain, southern, and eastern railroading. A Southern Railway flagman may be slowly freezing his fingers in Indiana, while his neighbor working out of Valdosta, Ga., may be cursing the hot sunshine as it broils his hide to an even brown.

Over the 323 miles of double track between

Southland Carrier

By Stuart Covington.

The 8000-mile Southern Railway has everything: intense coverage of our entire Southeast, 100-trains-a-day main line, Diesel streamliners, Eight-Wheeler branches, fifth highest freight carloadings in the United States.

Up the steepest mainline grade in the country, a 4.7 per cent climb near Saluda, N. C., blasts a Southern 2-8-8-2 simple articulated at the head of a heavy freight. Behind the third car can be seen a sand-covered safety spur leading up the mountainside, designed to catch possible runaways. Below is the Carolina Special with a 2-10-2 pusher on the rear tackling the same grade.

Both photos by W. H. Thrall Jr., 5839 Montebello Pkwy., Los Angeles 22, Calif.

Alexandria, Va., and Spencer, N. C. (the Washington and Danville divisions), roll 22 of the road's best passenger trains, plus multitudinous freight and extras headed north, south and southwest. At Lynchburg, 164 miles to the south, trains swing westward over the rails of the Norfolk & Western for the trip through Virginia to Bristol, Tenn., where they will again use Southern rails. At Danville, 50-odd miles farther, the

Richmond and Norfolk divisions swing into the main, loaded with lucrative freight from the ports of Norfolk and West Point, destined for the inland cities of Atlanta, Birmingham and Memphis.

At Greensboro still another line joins the main, this time from Goldsboro, Raleigh and Durham, large tobacco cities. Here is the home of the "tobacco auctioneer," he of the unintelligible spiel. At Greensboro another line extends westward to Winston-Salem, largest tobacco center of them all, then to North Wilkesboro and Mooresville, all in the region of the brown leaf. Here the Southern gets its huge tobacco ladings which are shipped to all points in the nation.

The Danville Division end is at Spencer, named in memory of Samuel Spencer, the Southern's first official head. In Spencer are some of the road's largest terminal facilities—a 37-stall roundhouse boasting a 100-foot turntable, a huge car repair shop, and one of the biggest coaling stations on the entire line. Here the mountain division to Asheville and Murphy runs off in a southwesterly direction a few miles to the south. Here, too, the Southern uses its biggest power (barring its Mallets), big 525,000-pound Santa Fe locomotives capable of pulling everything that a yardmaster can tie on to them. Engines are changed here on all runs, save those of the Diesel streamliners and Diesel-pulled conventional equipment which runs through to Atlanta.

Boss of the Washington Division is W. H. DeButts, brother of Harry A. DeButts, operating vice-president of the Southern. Boss of the Danville Division is Carrol Ashley. From their offices at Alexandria and Greensboro these two men watch to see that nothing goes wrong on their 300 miles of hot mainline railroad. This is something of a task, considering that well over 100 trains a day pass over this mileage with as little as 10-minute headway during the evening rush hours out of Washington. (Three fast passenger trains leave daily between 11:35 and 11:50 p.m.)

W. C. Bledsoe is superintendent of the Spencer-Salisbury terminals. Under his supervision are the road's huge classification yards at Spencer and the aforementioned shops and roundhouse.

Big boss of the road is capable, silver-haired Ernest Eden Norris. He entered the employ of Southern in 1902 and was made president in the fall of 1937, meanwhile serving in the

W. E. Glasley, 1055 Englewood Ave., Chattanooga, Tenn

Northbound and plainly meaning business is this Cincinnati, New Orleans & Texas Pacific (Southern System) freight, crossing the Tennessee River at Tennbridge, Tenn.

capacities of dispatcher and, later, division superintendent. Norris knows his railroads from angle cock to whistle.

The second hardest worker on the road is Virginia-born Harry Ashby DeButts, the 48-year-old operating vice-president. Starting with the Southern in 1916, the Virginian has held jobs of section hand, yard foreman, track supervisor, trainmaster, division superintendent, and general manager of eastern lines.

Sixty-year-old George Washington Adams, general manager of the eastern lines, threw in with the Southern at the age of 17, and has railroaded with it ever since, holding such varied jobs as operator, dispatcher, trainmaster and division superintendent. Now, with headquarters in Charlotte, Adams rules everything from Washington to Atlanta and holds sway over all Southern trackage between the two points.

Biggest headaches for the Southern are its seasonal rushes. These include the peach season in Georgia and eastern Alabama, which occurs in midsummer; the fruit rush from Florida, which is at its worst in the late spring; and the cotton rush from Alabama, Mississippi, Georgia and the Carolinas during late summer and early fall. Because of these heavy business seasons, the company is forced to keep a large

surplus of engines and cars. When the peaches start rolling out of Georgia, everything in the roundhouse is pressed into service, from heavy freight hogs to light passenger engines. Besides this, a plentiful supply of reefers must be arranged for, plus plenty of ice with which to cool them.

While on the subject of the line's freight business, it might be well to examine the pretentious fleet of fast freights which range from Washington to New Orleans and Florida, and from Cincinnati to Florida, New Orleans and Charleston.

Heading the list is the *Southern Flash,* crack Washington - New Orleans train which, before the war, covered the 1155 miles between the two cities in 46 hours. This included extensive layovers in the Atlanta and Birmingham yards and lesser delays at Spencer, Charlotte and Meridian, Miss.

Besides the *Flash,* the Southern boasts the *Eastern Rocket* and the *Cottoncade,* the *Fabricade,* the *Spinning Wheel* (a hot textile freight), and the *Clipper* on the Cincinnati - Crescent City run, which delivers goods in the Louisiana city early the second morning and connects at Boligee with the *Creole Flash,* fast Frisco through-freight from Kansas City, St. Louis and Memphis. While the road does not publicize its fast freight runs as extensively as do the Illinois Central and Cotton Belt, the trains are, nevertheless, very well known in the territory they serve, and Southern's shippers are quite aware of their services.

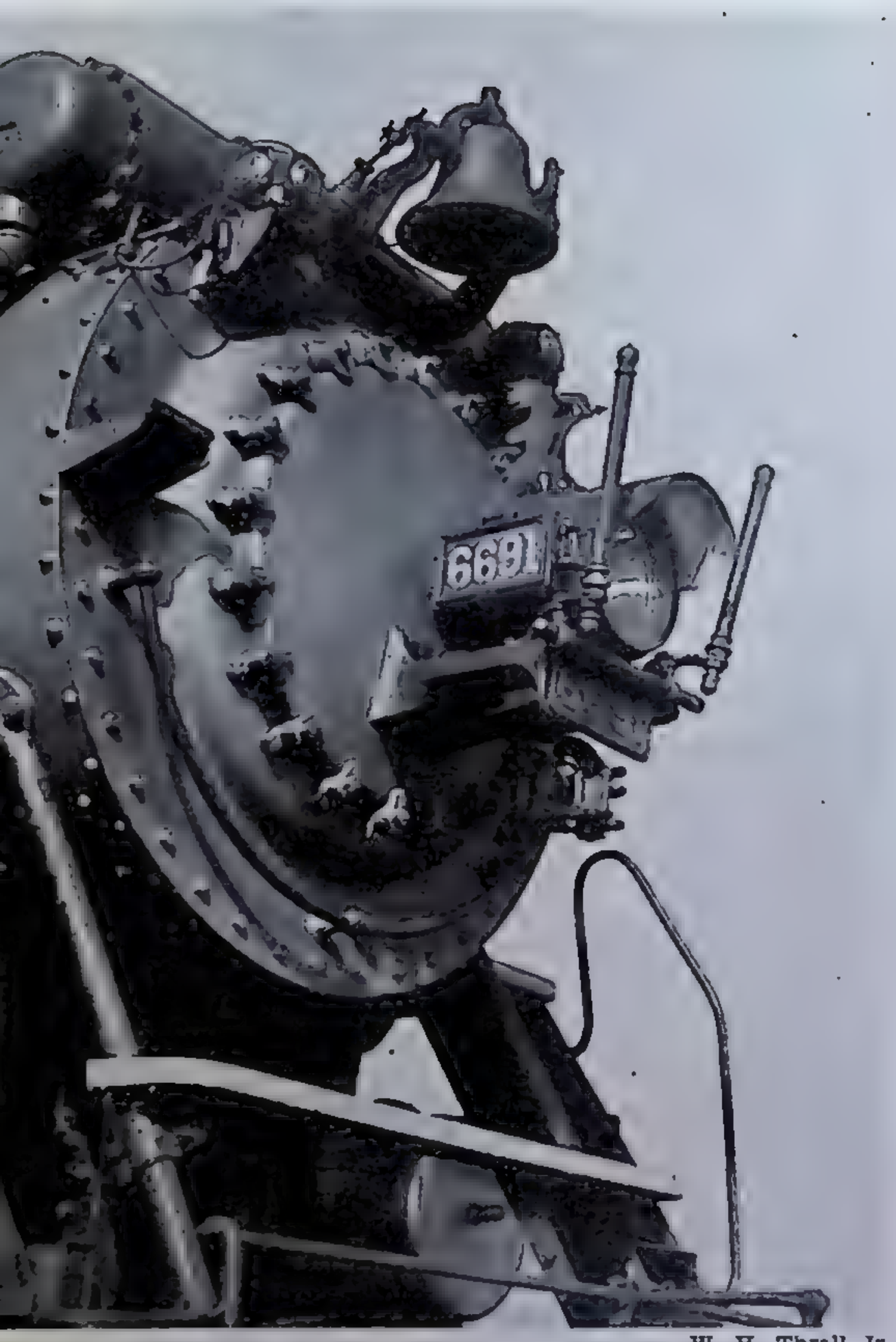
Besides the aforesaid "name" freights, probably the hottest of the road's freight runs are its Cincinnati-Washington-Florida fruit specials. Run in solid blocks behind passenger or Diesel freight engines and usually as extras, these hotshots cover the ground in nothing flat. In 1939, for instance, a strawberry special bound for Cincinnati made the 76 miles from Danville to Stearns in 107 minutes, an average speed of better than 40 miles per hour. Regular fruit trains are carded to cover the 338-mile Cincinnati Southern Division in as little as 10 hours, which, including water and fuel stops, calls for an average speed of over 35 miles per hour.

While freight traffic produces 80 per cent of the railroad's comfortable revenue, the company has not neglected passenger service. Two trains are completely streamlined from stem to stern, while three more boast Diesel-powered locomotives. Smaller Diesel streamliners are operated on five other runs, bringing the total of Diesel units to 36.

A large, impressive list graces the passenger-train retinue headed by such old, established thoroughbreds as the *Crescent,* the *Piedmont Limited,* the *Queen and Crescent* and the newer *Southerner* and *Tennesseean.* Other named

With green flags flying for a section section, the Atlanta-New Orleans express had a festive holiday air when this picture was taken one New Year's Day. The train is emerging from the tunnel under the Capitol grounds in Washington, D. C., used by Southern passenger trains and also by passenger trains of all other roads operating south out of Washington. The tunnel starts in the lower level of the Union Station, and after coming out of the bore the tracks lead through Potomac Park and across the Potomac, affording an excellent view of the city.

W. H. Thrall Jr.



W. H. Thrall Jr.

Green, gold, and polished brass.

engine takes it in tow until it reaches Lynchburg, where the Norfolk & Western takes over. At Bristol our wandering Pullman returns to the Southern and remains on Southern rails until it reaches Meridian, where the Illinois Central acquires possession and forwards the car to its final destination. All this is done in slightly over 30 hours.

To facilitate its through business, the Southern at various times has acquired direct control of several short lines operating in its district. Some of these holdings it later relinquished, but it still holds the reins of management of five.

Largest of these is the 110-mile Carolina & Northwestern, extending from Lenoir to Chester, where it connects with the parent road. Besides the Carolina & Northwestern, the Southern controls the Danville & Western, operating 56 miles of track in Virginia and North Carolina; the High Point, Randelman, Asheboro & Southern, a road with a name almost as long as its mileage (27.7); the Yadkin Railroad, operating out of Salisbury; and the prosperous Blue Ridge Railway, running from Belton to Walhalla, S. C. Only the Carolina & Northwestern maintains passenger service over its entire line, though the Blue Ridge offers daily varnish service from Anderson to Walhalla and mixed service over the remainder of its 44.2 miles. The D&W also offers its patrons daily-except-Sunday mixed service, over its entire line.

Besides its ownership of the aforementioned short lines, the road in May, 1902, acquired joint ownership of the Monon Route with the L&N. This gave the Southern access to Chicago through its tie-up with the Monon at Louisville. Shortly afterward, the Southern made another important move. Together with the Pennsy, Seaboard, Atlantic Coast Line, C&O and B&O, it took control of the Richmond, Fredericksburg & Potomac, connecting Richmond with the nation's capital.

During this decade, the road also acquired the Harriman & Northeastern, the Northern Alabama, and the Cincinnati, Burnside & Cumberland Gap, all short lines in the central southern states.

Though the Southern and the L&N are now on friendly terms, all was not peace and tranquillity between the two roads during the latter part of the last century. During that period both roads fought each other doggedly for the remaining short lines in their territory. Each road, in an attempt to prevent the other from obtaining a new through route, would quickly absorb any new line which came into being. In this connection, Milton H. Smith of the L&N and Samuel Spencer of the Southern met at Kennesaw, Ga., on October 28, 1894, to discuss certain of these short lines. Here both railroaders displayed their canniness in appraising their respective acquisitions.

Said Smith, "They're miserable abortions."

"Decline to have anything to do with them," retaliated Spencer.

Of another road, Spencer spoke thus: "We do not want it unless you want to give it away with an endowment fund added, sufficient to take care of it for life." The discussed railroad was acquired by the Southern less than one year later, and still remains a part of the system.

About this time the company took over one of the oldest railroads in the South, the old

W. H. Thrall Jr.

Approaching the bridge across the French Broad River, the Carolina Special rounds a curve near Asheville.

Mobile & Ohio, which then stretched from St. Louis to Mobile and Montgomery. This was mainly to protect the Southern's interests in Mobile and to forestall a similar move by some other line. The M&O was retained until its merger with the GM&N a few years ago. This acquisition had given the Southern a through route between Memphis and Mobile via Corinth, and between St. Louis and New Orleans via Meridian, substantially increasing the road's freight traffic between the cities mentioned.

Though the Southern controls the north-south freight traffic, it shares both this and its passenger business with three other major systems. Between Washington, Atlanta and Birmingham, it competes with the considerably smaller Seaboard Railway, which nevertheless gives the larger carrier a run for its money. The Seaboard's two passenger trains between Washington and Birmingham have approximately the same schedule as the Southern's crack flyers, and they hack a considerable portion from the big road's north-south business.

Biggest competitor, however, is the L&N. Its lines practically parallel those of the Southern between Cincinnati and Atlanta; Cincinnati, Birmingham and New Orleans; and between St. Louis, Louisville and Atlanta. The Southern's Cincinnati-New Orleans route is shorter but the L&N's schedules are swifter. Mileages of the two roads between Atlanta and the Queen City are about even, but nevertheless L&N gives Southern plenty of competition for both its freight and varnish business. Both roads operate two passenger runs a day between the two cities, the Southern via Chattanooga and the L&N via Knoxville. However, it is fairly safe to say that Southern has the edge on this busi-

ness even if the L&N may do a slightly bigger amount between the Queen and Crescent cities. Third competitor of any note is the Atlantic Coast Line. This double-track road does the largest proportion of the New York-Florida business, even though the Southern comes in for a healthy share. The former road's "high yaller" is probably the hottest fruit train between the two regions.

Despite these three, however, Southern manages to gain for itself the biggest and choicest part of the traffic in the regions it serves, and shows little signs of relinquishing any to its competitors.

Like most large systems, the road depends upon trackage rights for part of its mileage and, in turn, grants a fair share of its rails to other roads for their use. Main track-sharing of the Southern is in Tennessee, where it operates over 32 miles of the NC&StL from Stevenson, Ala., to Wauhatchie, near Chattanooga. Another case is the 197 miles between Hardeeville, S. C., and Jacksonville, where its trains run by courtesy of the Atlantic Coast Line. Here, however, only one passenger train a day is operated, compared to three in the case of the NC&StL tie-up.

Likewise, Southern shares its rails with five other Class 1 systems. The Illinois Central polishes Southern trackage between Jasper and Haleyville, Ala.; the C&O uses the 72 miles between Orange and Alexandria, Va.; and the Gulf, Mobile & Ohio shares its rails from Slidell to New Orleans. Besides these, the road grants lesser trackage rights to the L&N and the Seaboard in the Birmingham area.

The worst piece of trackage operated by the Southern is the famous "rathole" division extending from Wilmore, Ky., southward to Oakdale, Tenn. Here, at one time, existed no less than 27 tunnels in slightly over 150 miles. One 14-mile stretch contained eight crooked bores. Today, 11 of the tunnels have been eliminated, but the division still isn't a rail's idea of heaven, the oven-like tunnels more nearly resembling the opposite. In the late '90's a contrivance was designed to deflect the smoke from the engine stacks back over the cab roofs. This improved the lot of the enginemen considerably.

However, in the early 1920's the Santa Fe type of locomotive made its appearance on the scene. These hogs were so big that the smoke ducts were little, if any, good. Promptly, officials extended the ducts back over the cabs of the engines. This was fine for the crews, but now the engines wouldn't steam. Finally, after many unsuccessful efforts the Santa Fe's were shipped to another division, and the company went back to using the shorter, lighter Mikados. The Santa Fe's did not return until 1923, when the tunnels were enlarged and the tracks lowered two feet.

On the "rathole," as on most mountain divisions, numerous runaways occurred. Perry Keeney tells of a hairbreadth escape from death in his *Cincinnati Southern Memories.* He says: "Pat Taylor and Conductor Sam Martin were going north up Burnside Hill as the second section of a drag when the front man broke in two between tunnels. Pat's hog was busting her stack as she paced across the bridge for a run at the tunnel, and almost anyone can imagine his plight when he saw a wild caboose and then three cars come rocketing out of No. 4, hellbent for his pilot.

"The engine crew froze on the seat boxes. There wasn't time to work problems in arithmetic—the answers would have added up the same anyway. A 160-foot leap from the engine meant death, so they decided to risk it the other way and stay with the old girl in her trouble. Pat shut off the steam and the pig took the lick on the chin. The caboose leaped high in the air; then a cloud of dust and blowing steam gulfed the crummy and cars.

"When the hogger climbed to his feet and looked back to see what was happening to his train, he got his second scare. A gon was in the act of taking a nose dive through the span of

Optional routes.

For the benefit of those who must travel but who cannot get accommodations by their usual route, TRAINS each month will print a brief listing and survey of available routes between larger cities.

St. Louis and Kansas City:

Burlington - Alton—Via Mexico. A 6½-hour eastbound (7-hour westbound) day train and an overnight train with sleepers on competitive schedule.

Missouri Pacific—Via Jefferson City and Sedalia. Five day trains including two on 5-hour running time, fastest available. One overnight train westbound, two eastbound, with sleepers, on competitive running time.

Rock Island—A day local each way carrying only coaches; 9½-hour running time.

Wabash—Via St. Charles, Mexico, Centralia, Moberly, Carroltown. Two day trains, the faster in 5 hours 50 minutes; one overnight train with sleepers, on competitive schedule.

W. H. Thrall Jr.

Big event at the bright yellow station in Lenoir, Tenn., is the arrival of Southern's New York Limited.

trestle behind his engine. Then he remembered a load of stacked wheels behind the tank. The collision had toppled them over and they were crashing through the structure. Cars bounced down after them like sheep and as Pat gutted the hog, he sent up a prayer for the caboose. When the dust finally settled, 18 loads had spilled through the two demolished spans. The engine stood close to one end, and across the gap Sam's caboose teetered perilously. All hands thanked their stars for a lucky break that day."

Such is one of the sagas of the old Cincinnati Southern, of which the "rathole" division was a major part. Today, the entire line is protected by train control and an automatic block system, and wrecks are few and far between.

The CS was also noted for other reasons. In 1907 W. H. Dooley, a master mechanic, created the first "modern" smoke deflector. This was constructed in the CS's shops at Somerset, Ky., and consisted of an extension of the engine stack, bent like an elbow pipe. The device was two feet high and, as H. G. Monroe, ex-Southern brakeman, explains, "hinged in such a manner that it could be raised or lowered by a contrivance that included a set of gears and an air cylinder." The device, however, was not satisfactory, as it proved too high for most of the small tunnels. It was soon discarded. The enterprising Dooley later constructed an improved "bonnet" smoke-eater, which is still in use on several first-class railroads.

Also deserving of mention are the Southern's extensive shop facilities. Besides its large Spencer shops, the road maintains other large shop plants at Citico, near Chattanooga, Tenn.; at Inman Yards, Atlanta; at Finley, in Birmingham, Ala., and at Custer, near Knoxville. At Finley, in the company's largest and most extensive shops, locomotives can be completely rebuilt from drawbar to sand dome. These shops are probably the largest of any in the South and have long been known for the versatility of their achievements. Here are groomed the big green-and-gold Mountain and Pacific passenger engines for such runs as the *Birmingham Special, Queen and Crescent, Kansas City-Florida Special,* and *Sunnyland.* Equally well kept are its ponderous Mallets, used for mountain freight between Birmingham and Atlanta and between Birmingham and Parrish, Ala., on the coal drags. Second only to the Mallets are the heavy McArthur [Mikado] types, used in lighter freight work between Birmingham and Chattanooga, Meridian, Atlanta, and Columbus.

On its Cincinnati Division the railroad operates its multi-unit Diesel freight locos, which can handle 90 cars up steep Kentucky grades with little or no effort.

Besides its Diesel freight units, the road uses internal-combustion power on three of its passenger hauls: the *Crescent,* the *Piedmont,* and the *Ponce de Leon.* For the bulk of its heavy passenger traffic, however, it still depends on the familiar green-and-gold Pacific and Mountain types, which wheel such crack trains as the *Royal Palm,* the *Asheville Special,* and

W. H. Thrall Jr

Climbing the Blue Ridge Mountains, this local freight train emerges from a tunnel as it nears Ridgecrest, N. C., en route to Asheville. It is Extra 585 West, led by a 2-8-0. With full steam up and her bell ringing, Pacific No. 1347 (below) takes the Piedmont Limited out of Charlotte, N. C. The Charlotte passenger station is architecturally noteworthy for its tall tower and the archway spanning the tracks.

W. H. Thrall

the *Sunnyland* on their comfortably swift schedules. Hardest worker of the Diesel passenger fleet is the *Crescent* locomotive, which nightly tows 10 Pullmans, a diner, and express and mail cars from Washington to Atlanta. Scarcely less of a workhorse is the steam type on Washington-Atlanta trains Nos. 39 and 40, which handles a complement of 10 or more Pullmans, diners and coaches, plus a brace of head-end cars on an equally tight schedule.

To the 30-odd millions in Dixieland, the Southern is a household word. Stretching as it does from the Potomac to the Gulf of Mexico and from the Atlantic to the Mississippi, the 8000 miles of the road's 21 operating divisions enable it to offer direct service to practically every key city and port south of the Mason and Dixon boundary. It is safe to say that no other industry in the South employs so many persons or affects so many lives.

Besides being the South's No. 1 carrier, the railroad holds an important place among the Class 1 lines of the nation. It ranks fifth among all rail lines in car loadings, and is first in the South. In operating income it tops all carriers south of the Alleghenies and is close to the very top among the lines of the country. It rates as one of the 10 largest carriers in the United States and operates more mileage than any line east of the Mississippi, except the New York Central. It is, then, one of the biggest transportation factories in the business.

Like most other big enterprises, this railroad didn't just get that way. In its earlier form, it was very little larger than the smallest short lines which it later absorbed, and it possessed but scant rolling stock and repair facilities.

Conceived in its present form in 1894 to acquire the properties of the Richmond & Danville and the East Tennessee, Virginia & Georgia railways, the Southern immediately began a program of absorption and expansion which was to include nearly every small rail line in its territory.

The Richmond & Danville had been chartered on March 9, 1847, and on May 16, 1856, it opened 141 miles of line between the cities named. Efforts to extend the line south from Danville, however, were blocked by the state of North Carolina for some time. However, in 1864 the Confederate government constructed a line known as the Piedmont Railroad from Danville southward to Greensboro, some 48 miles. This the R&D acquired, after having leased the North Carolina Railroad (Goldsboro to Charlotte via Greensboro) in 1871. With the Charlotte, Columbia & Augusta, which it had bought in 1878, this gave the rapidly growing system 191 more miles of track. During the next 18 years the road extended its track by the usual method of acquisition and construction into Georgia, Alabama, South Carolina, and Mississippi, acquiring the Atlanta & Charlotte Air Line (by lease) and the Western North Carolina, Georgia Pacific and Virginia Midland lines between 1881 and 1888.

The ETV&G was a consolidation of the East Tennessee & Georgia (constructed from Dalton, Ga., to Knoxville in 1855) and the East Tennessee & Virginia (opened from Bristol to Knoxville in 1856). The ETV&G afterward gained control of the Cincinnati, Cumberland Gap & Charleston, the Memphis & Charleston, the Selma, Rome & Dalton, the Albama Central, the Knoxville & Ohio, the Cincinnati & Georgia, the Macon & Brunswick, and several smaller lines.

Hence, when the Southern appeared on the scene in 1894, it already had a sizable network of trackage in seven states, together with the control of another railway and with substantial trackage rights over still another. It had, in effect, a main line reaching from Alexandria, Va., to Columbus, Miss., near the Alabama state line, and a secondary main line from Chattanooga to Brunswick, Ga., with feeder lines running from Memphis to Bristol, Tenn., and from Selma, Ala., to Rome, Ga., plus the original line from Richmond to Danville. The Southern's officials were faced with the gigantic task of weaving this disconnected mass into a more or less congruent pattern. Samuel Spencer, the road's first president, was known the length and breadth of the South as a shrewd railroader, however, and experienced little difficulty in welding his new empire together. In after years, he was to prove his prowess as a businessman and railroader on more than one occasion in dealing with adversaries such as the Louisville & Nashville and other large systems.

In subsequent years, several lines of varying lengths were incorporated into the Southern fold—lines such as the original route of the famous South Carolina Railway, the first railway in America to use steam locomotives. By subsequent acquisitions, the Southern obtained the Alabama Great Southern and the Atlanta & Florida in 1895; the Cincinnati, New Orleans & Texas (lessee of the Cincinnati Southern, owned by the City of Cincinnati) in 1899; the New Orleans & North Eastern in 1917; and the

Georgia Southern & Florida in 1895. Together with the Alabama Great Southern and the New Orleans & North Eastern, the CNO&TP formed the famous Queen and Crescent Route known by railroaders for nearly half a century. The memory of this once-famed route is commemorated in the Southern's present-day *Queen and Crescent Limited,* running between Cincinnati and New Orleans.

Had the dreams of the founder of the Georgia Pacific Railway materialized, the Southern's main line would probably have extended to Texarkana, Ark., instead of to New Orleans. The Georgia Pacific, that part of the Southern extending from Atlanta to Columbus, Miss., was founded by General John B. Gordon about 1880. The general planned to construct a transcontinental system from Atlanta through Birmingham and Columbus to a connection with the Texas & Pacific, presumably at Texarkana. He acquired trackage rights from Greenville, Miss., through to his destination; but the money gave out, and the general's grandiose scheme of linking the East and the West ended in a dismal failure. Shortly before the line's completion to Greenville in 1889, control passed to the Richmond & Danville, which operated it until both properties were acquired by the Southern.

More fortunate than the Georgia Pacific was the Cincinnati Southern. Incorporated in the 1870's to reach Chattanooga, Tenn., and to give the city of Cincinnati a rail outlet to the South, the road was completed on February 12, 1880. This line, as stated before, is now leased to the CNO&TP.

Less spectacular than the rapid completion of the CS is the history of the Alabama Great Southern, that part of the Southern extending from Chattanooga through Birmingham to Meridian. Originally the Alabama & Chattanooga Railroad Company, it was completed on May 17, 1871. This road was, in turn, the outgrowth of two smaller lines: the Wills Valley Railroad Company and the Northeast & Southwest Alabama Railroad Company, chartered in 1852 and 1853, respectively. The two lines were consolidated in 1868 and, through state aid, were completed three years later. Nineteen years were thus required to complete the 295 miles forming the company as compared to less than half that time for the 338 mountainous miles of the Cincinnati Southern.

Shortly after 1920, the Southern discontinued operating that part of its line from Greenville to Columbus and Mississippi, and the property began operation as the Columbus & Greenville Railway. This probably was the Southern's first large-scale abandonment.

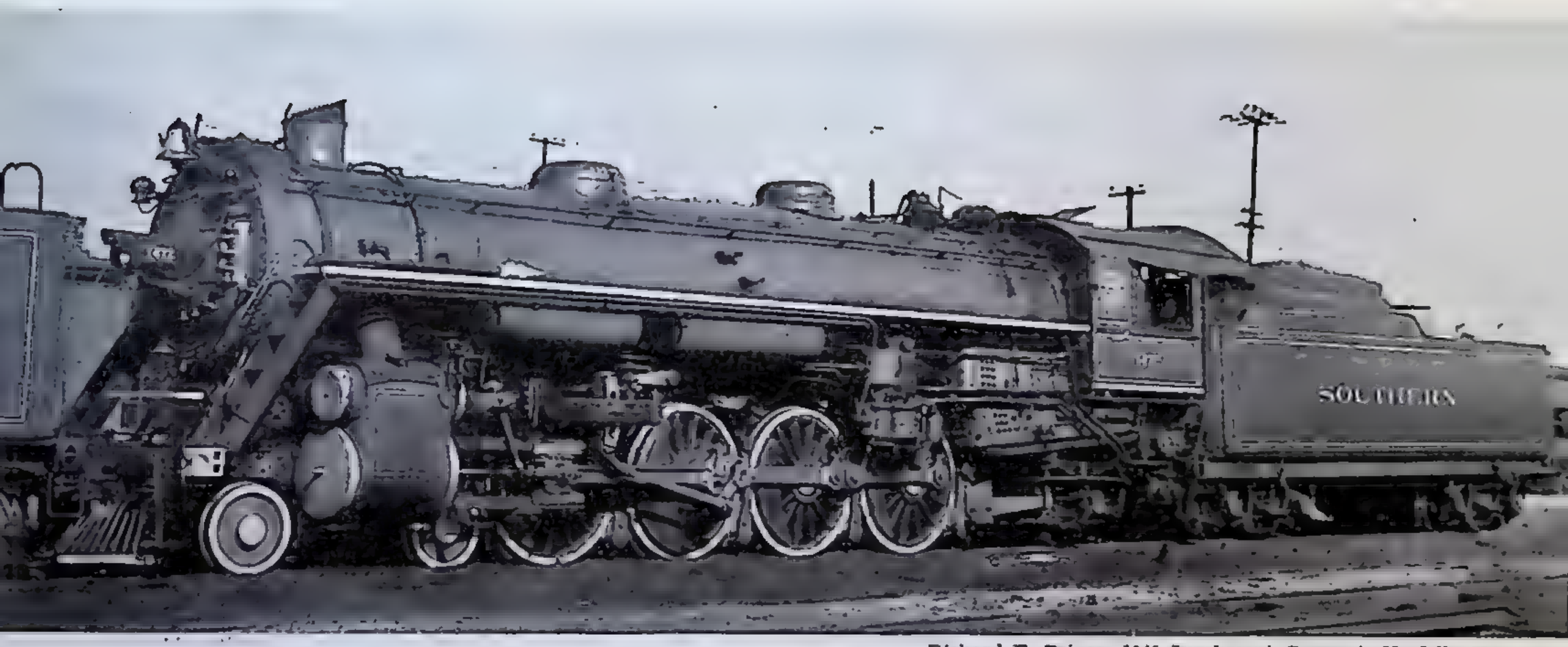
So much for corporate history. We now know that, by 1920, the Southern had practically achieved its present form. It then had main lines reaching from Washington, D. C., to New Orleans, La., and from Cincinnati to Jacksonville and New Orleans, as well as secondary main stems from Washington to Memphis and from St. Louis to Danville. These lines, then as now, comprised the main routes of the Southern System.

The company next proceeded to put its railroad in A-1 condition. It constructed 1021 miles of second track, installed 4053 miles of block signals and 3410 miles of automatic train control. New locomotive repair shops were constructed at Atlanta and Birmingham, and car repair shops at Atlanta, Birmingham and Hayne, S. C., near Spartanburg. New classification yards and engine terminals were built at Knoxville, Chattanooga, Jacksonville, Columbia, Asheville and Winston-Salem. A new passenger terminal was constructed at Atlanta, and Macon, Ga., received a new engine terminal.

By 1925 business had reached its peak, carloadings soared, and passenger trains were crammed. Buses and trucks were just then appearing on the scene. Big green-and-gold passenger engines and bigger, less gaudy freight locos began making their appearance on Southern rails. The road was buying new power. Its business was zooming steadily upward, and it needed something to handle it with.

Came 1930 and the depression, and carloadings skidded downward. Engines were stored, stations closed, trains pulled off and crews furloughed. The company quit spending money and tried, instead, to save it. This didn't prove to be easy. Even with stringent economy the money poured out at an alarming rate. Vice-presidents shook their graying heads; operating officials moaned. And yet the Southern wasn't in such a bad mess. It still ranked fifth in carloadings and its funded debt wasn't half as [illegible] as it might be. The only thing to do, decided officials headed by President Fairfax Harrison, was to sit back, hold tight, and hope for the best.

Finally the storm blew over. Things began to look normal once more. National defense was bringing traffic back to the rails. Of course, the blow had done its damage. Most of the Southern's less-than-carload business had gone to the trucks, and passenger receipts were



Richard E. Prince, 1141 Larchmont Crescent, Norfolk, Va.

scarcely half what they had been. But on the horizon loomed a new and shining hope which, according to its exponents, would save the railroad industry. It was the Diesel locomotive. Immediately the company invested in several. It followed the original order by a larger one, this time buying six units for passenger service. Still later it bought several multi-unit jobs for both heavy passenger and freight service. The Southern was coming back. With the advent of streamlined trains, the public began to return to the rails—slowly, but they were com-

Southern passenger locomotives are kept beautifully painted and striped with green and gold. Pacifics predominate in the passenger motive-power roster, but many of the heavier trains are handled by Mountain-type locomotives like the 1472, above. The 4-8-2 wheel arrangement was, in fact, developed especially to cope with the peculiar grade conditions in the mountains of the Southeast, although it is now a widely used type wherever service conditions demand a high-speed locomotive of somewhat higher horsepower and tractive effort than the Pacific. The Eight-Wheeler below carries a brass monogram plate on the smoke box and the engineer's name on the side of the cab: E. B. Jacob. This engine, assigned to the Mobile Division, is pictured at Selma, Ala.

William Monykeny, Railroad Photographic Club, 47 Royal St., Allston, Mass.

iing. Fast freight schedules giving overnight service had beaten the trucks at their own game.

Today, of course, the Southern has more traffic than it can handle. Few roads can boast so impressive and large a varnish-train ensemble or such an unusually healthy freight and passenger business. True, only recently did the railroad inaugurate streamlined service, sticking instead to conventional equipment long after many lesser lines had launched vast streamliner fleets; and even now only two of its trains have been glamorized by the addition of hostesses. But the equipment it offered was adequate, if not luxurious; and its limited trains rivaled those of any road for solid comfort in the old style.

A second reason for Southern's command of its field is its facile location. The only railroad with a direct through-route from Washington to New Orleans and from Cincinnati to Florida over its own lines, it can beat all other lines on both north-south and east-west hauls. Its Washington-Memphis route is unchallenged, and Southern has the highly lucrative Carolina tobacco business practically to itself. No road handles more cotton and it is doubtful if even the mile-long fruit drags of the Coast Line equal the strawberry and fruit specials on the Cincinnati Southern. Furthermore, the road's business is not confined to one season. When the peaches quit moving out of Georgia, the cotton starts rolling in Alabama. When the fruit has quit coming out of Florida, the tobacco season has begun in the Carolinas.

The Southern's business is not one-way, the major problem of most railroads. Cars coming from the East with manufactured items roll back laden with textiles, cotton or tobacco. Reefers going west via Cincinnati come back piled to the ice bunkers with fresh Kansas and Oklahoma beef, direct from the Chicago stock yards. Nowadays, when a Southern official sees an empty car in a train, unless it's a bad-order, things usually start popping at that car's origin. The road can't afford to waste car space when

The all-Pullman train opposite is President Roosevelt's special from Warm Springs, Ga., some five years ago, photographed as it crossed the freight main at CR Tower, Va. The 2-8-8-2 articulated below at left is taking an Asheville-bound freight up the 4.7 per cent grade at Saluda with the help of a lusty Santa Fe type pusher. The passenger train below is the Queen and Crescent leaving Birmingham.

All photos, W. H. Thrall Jr.

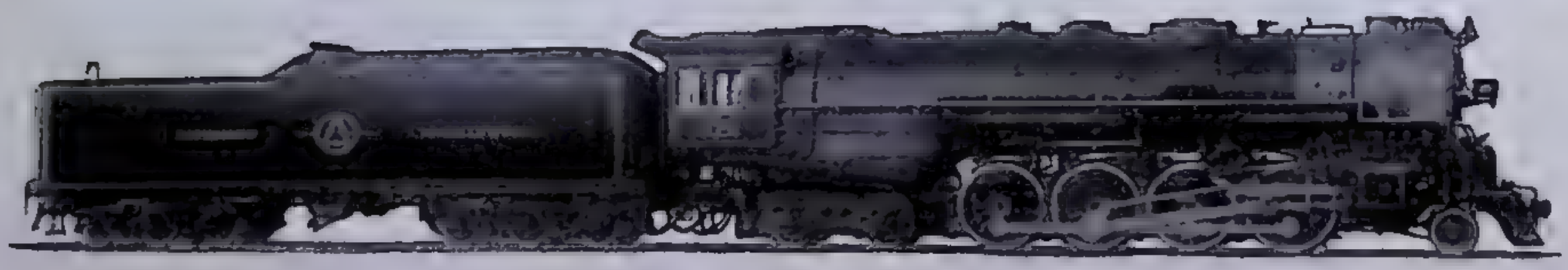
W. H. Thrall Jr.

Carolina Special No. 28, crossing Lake Summit near Saluda, N. C., on its run between Cincinnati and Florida. The scenery is typical of the "land of the sky."

there's a war going on. Besides, there's no need for it. Southern has plenty to haul both ways.

While this railroad doesn't do a big vacation business, as do the Seaboard and Atlantic Coast Line, it derives a comfortable revenue from travel to and from the spas at Asheville, Aiken and Augusta; through cars travel between New York and Aiken, Augusta and Asheville, between Asheville and Jacksonville, and between Louisville and Asheville.

To handle the maintenance of its 1588 locomotives, the company has erected huge shops at Citico, near Chattanooga, Tenn.; at Hayne, near Spartanburg, S. C.; and at Inman, near Atlanta. Besides these are the before-mentioned Finley shops. Busiest, if not the largest, is



10 Berkshire-Type LIMAS for the R.F.&P.

During 1943 Lima delivered to the Richmond, Fredericksburg & Potomac Railroad Company 10 new 2-8-4 locomotives for service on the Capital Cities Route.

This type of locomotive was first developed by Lima in 1924, and the original experimental 2-8-4 locomotive was tried out by the Boston & Albany and the Illinois Central. Both roads purchased a number of this type later, and the B&A dubbed theirs the "Berkshire," because it was so successful in service over the Berkshire Hills.

LIMA LOCOMOTIVE WORKS INCORPORATED

LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, O.

at Inman. Here locomotives for the 30 passenger trains daily entering and leaving Atlanta are serviced. Here, too, is Southern's huge office building, adjacent to the terminal station and covering an entire city block.

In the summer of 1938, *Life* magazine presented an intensive survey of the Southern's Charlotte Division in which it showed pictorially the various duties of the railroaders and the work connected with operating a mainline division. Of the railroad, *Life* observed editorially, "This 8000-mile system, whose apt slogan is 'The Southern Serves the South,' is much better off than many carriers, but not so well off as some. It loaded 17,759 cars of revenue freight in the week ending April 2; only four roads in the country loaded more. . . ."

Southern's largest contribution to the war effort is in teaching railroading to the armed forces. Under the leadership of Lieutenant-Colonel F. W. Okie, former superintendent of Southern's Birmingham Division, with headquarters at Camp Shelby, Miss., the U. S. Army familiarizes itself with all phases of railroad operation from track repairing to dispatching. This is done through the courtesy of the Southern, which gave the army permission to use its NO&NE division for the training of railroad soldiers. Here the men learn the fine points of the art of railroading from firing to running an engine. Operating officials of the Southern cooperate fully with army officers and give the boys in khaki a free hand.

The 727th Railway Operating Battalion, sponsored and trained by the Southern, and two-thirds of whose officers are former Southern men, was one of the first American rail units to operate in North Africa, keeping the Second Corps supplied in its victorious drive against the Afrika Korps. It operated 200 miles of railway between Ouled Rhamoun in Algeria and the forward Allied base at Tebessa in Tunisia.

The 727th is now in action in Italy, having followed soon after the first waves of American troops had gone ashore at Licata, Sicily, last July. Plans for the campaign called for train operation to start more than a month after the opening of the attack, but within four hours the 727th had a train running and by the end of the month supplies were being carried over 300 miles of track across Sicily. German demolition bombs had been effective, and before anything could run, tracks had to be rebuilt, locomotives repaired, and rail yards cleared of debris.

ERNEST O. TAVENER

"ALL-WEATHER" MAN ON THE RAIL FRONT

● Here's another "North Western" 30-year service man—Freight Brakeman Ernest O. Tavener.

Belying his pleasant exterior, Tavener is tough—tough in the sense that the elements mean nothing to him when there's work to do. Snow may beleaguer a city, bitter cold may nip ears and noses, yet Brakeman Tavener stays on the job. As he says, "My work helps to keep trainloads of war materials on the move, therefore it's important . . . the war must be won."

The war must be won!—that, too, is the motivating thought of Tavener's sons. Lieutenant Gene, with special training in radar, has had over six months service in Iceland. Lieutenant Ernest is a bombardier, now on duty in the South Pacific. Caryl, the youngest, is an aviation cadet, completing his training in Texas.

The Taveners are loyal Americans. But war isn't a glamorous thing to them. They're fighting because their way of living is endangered; because they feel, as do millions of others, that peace can come to this war-torn world only through the united efforts of all. "Braking" trains is one way of helping—fighting on the battle front is another.

"North Western" gratefully acknowledges the efforts of its thousands of patriotic employes. Like Tavener they have accepted the added responsibility of war—and are coming through gloriously.

SERVING AMERICA IN WAR AND PEACE FOR ALMOST A CENTURY

CHICAGO and NORTH WESTERN LINE

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A Great Railroad

30-8

Correspondence

At Washington I witnessed a pantomime I shall long remember. Picture a car full of soldiers—tired and weary in a car whose lights go out whenever it stops. A train from the north pulls in, stops two tracks over with the ladies' room directly in line of vision. A youngish person comes in, adjusts her garters (understandably creating a stir of interest among the soldiers), then walks into the little room with the opaque glass window and goes through a clothes-adjusting performance which amuses the soldiers no end. She will never know what a lift she gave to their morale!

Arthur J. G. Illian, New York 4, N. Y.

Riding a Pennsylvania express recently between New York and Philadelphia, I found that the nine-car train was made up entirely of multiple-unit cars. I went to the front car and rode right up front all the way, as good as a cab ride over the world's busiest railroad without any of the trouble of getting permission.

S/2c Kenric M. Miller, U. S. C. G.

The article in January TRAINS on the Raritan River was very good, but neglected to mention its signals. About the time of World War I, the entire Raritan River Railroad was completely signaled (main line only) with one of the first installations of searchlight-type color-light automatic block signals. Since the elimination of passenger service in 1938, the signals have been removed.

Henry T. Wilhelm, Long Island City 2, N. Y.

Why, why do you keep insisting upon these very doubtful speed records of the early days of this century? The time-keeping was grotesque, to say the least; timing to the half-minute on an ordinary watch is of no use at really high speeds, and you must admit that it would not be accepted for any serious speed attempt. We, over here in England, have a similar "record" set up in 1905, when the *City of Truro* on the GWR was supposed to have been timed at 103 miles per hour. In 1934 this came under serious scrutiny, and is not now regarded as accurate, the correct figure being probably 93 miles per hour.

Brian Connelly, Exeter, Devon, England.

[American railroad watches have always included a second-hand, and these are habitually used in figuring speed. The more important speed runs are checked with stop-watches.—*Ed.*]

In the '90's there was a double-track steam line from Bristol, Conn., to Hartford—about 20 miles—part of the main line of the then New York & New England, later New Haven. The westbound rail was converted to third rail (although still used by westbound steam trains) and ran for several years. The third rail was laid between the running rails instead of to one side and was, of course, fully exposed. Naturally, there was plenty of trouble with trespassers, let alone shorts caused by tools, brake beams, etc., but I personally rode this line many years ago and found it a most interesting one.

Edward F. Sweeney, Waterbury, Conn.

In Indianapolis I spent an hour at the Traction Terminal building, to study the contrast between what it was in the days when it was known as the largest and busiest interurban depot in the country, and what it is today. Now it is filled with buses and not at all as interesting as in the days when it was filled with all types of interurbans.

Arthur Waehner, Agent, Kenosha, Wis.

Best-selling books

Book sales figures are always interesting indications of public taste in reading matter. The largest single seller of railroad books is Kalmbach Publishing Co., and its sales give a good guide to the public preference in railroad reading matter. Obviously the figures are prejudiced in favor of our own publications, for on these we do a publisher's business as well as a retail and jobbing business. Anyway, here is the box score of railroad best-sellers just as a matter of public interest:

1. Trains Albums of Railroad Photos, the popular $1 photo albums. The Eastern album has a slight lead, with the Far Western, Midwestern, and Colorado albums following in order. Any one of these albums has a four-to-one lead over the next best-selling railroad book.
2. Trains Map of Colorado Railroads.
3. Trains Map of Pennsylvania Railroads.
4. Union Pacific "Big Boy" Kodachrome print for framing.
5. Railroad Panorama, the just-published book by A. C. Kalmbach, editor of Trains.
6. The "Westbound Freight" and "Noonday Waterstop" watercolor prints for framing.
7. Trains magazine annual bound volumes.
8. Locomotives on Parade, by Edward Hungerford.
9. The $10 de luxe combined album of railroad photos.
10. Clear the Tracks, by Joseph Bromley.
11. Highliners, by Lucius Beebe.
12. High Iron, by Lucius Beebe.
13. Bonanza Railroads, by Gilbert Kneiss.
14. Railroading From the Head End, by S. Kip Farrington Jr.
15. This Fascinating Railroad Business, by R. S. Henry.

All these items, so well accepted by public approval, belong in any railroad library. They are described in detail in our new book folder which has been sent to all regular direct-mail TRAINS subscribers and which will be sent to anyone else on request.

A complete stock of all reasonably priced popular railroad books is maintained at our office, and direct-mail orders (all prices are postpaid) are taken care of with as much promptness as possible under present conditions. All good hobby shops also carry complete stocks of these books where you can examine them before purchasing.

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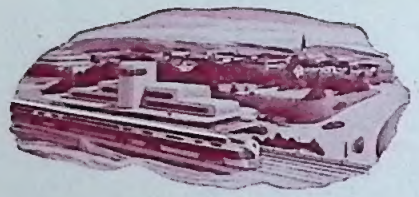

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